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The National Fruit Magazine of America

AMERICAN
FRUIT GROWER
MAGAZINE

Published monthly at 53 West Jackson Blvd., Chicago, Ill.

(Title Registered in United States Patent Office)
Member of the Audit Bureau of Circulations
Entered as second-class matter Oct. 17, 1917, at Post Office at Chicago, Ill., under the Act of March 3, 1879

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Advertising Rates: \$1.75 an Agate Line Flat, or \$24.50 per inch. Classified, 15c a word.

Subscription: 1 year, 50c; 3 years, \$1; Foreign: 1 year, \$1

Vol. XLIV.

OCTOBER, 1924.

No. 10.

Successful Tree Planting

by C. D. Matthews
North Carolina Agricultural Experiment Station

THE ULTIMATE aim of every fruit grower is an orchard of trees bearing large and profitable crops. If he is a commercial orchardist with a large commercial planting, the degree of success of his venture will depend in part upon the uniformity of the orchard, the health and vigor of the trees, and the age at which they come into profitable bearing. These three important considerations are closely associated with the setting out or planting of the orchard. It is the purpose of this article to supply information and suggestions on the main points involved in planting fruit trees successfully.

Preparation of Soil

It is important to emphasize the proper preparation of the land before planting if the best results are to be secured. It is highly essential that the soil be thoroughly prepared before planting begins. This point cannot be dwelt upon too forcibly, for it not only insures more rapid work in tree setting but in addition much better work can be done, for the fine, loose soil packs easily around the roots when tamped in, thus insuring against the tree drying out. On all soils deep plowing is essential before planting. Deep plowing increases the moisture holding capacity of the soil and causes the tree roots to go deeper, which is a decided advantage during summers of drought. After plowing, the soil should be well pulverized by disking and harrowing. If a site is in good surface condition it can be more easily and neatly planted than one which is rough and full of roots. It is best to select a time for planting when the soil is neither too dry nor too wet.

Kind of Trees to Plant

These directions are primarily for apple and peach trees, though they apply in part to other kinds as well. The tendency has been growing throughout the country toward planting one-year-old trees. Experience and observation have brought most horticultural authorities and nearly all fruit growers to the conclusion that one-year-old trees are best and many agree that in the case of apples one-year-old whips are more desirable than the branched trees.

There are a number of advantages in favor of the one-year-old trees in general and specifically in favor of one-year-old four to six-foot apple whips. In the first place, one-year-old trees can be headed uniformly and at the correct height. The limbs that form the frame work can be developed the right distance from the ground and according to the most approved system. A more uniform bearing orchard can be produced because the growth of the trees can be more definitely directed.

One-year-old trees will come into bearing just as soon as older trees planted at the same time. Another important consideration is that one-year-old trees are cheaper to plant; they cost the fruit grower less; and the loss during the first season is reduced. One-year-old trees stand the shock of transplanting more easily than older trees. There are no ex-

remely large roots cut and mangled in digging; in fact, a much larger portion of the root system remains and the balance between root system and top is not so severely destroyed; con-

in the root stocks on which the trees were budded or grafted. Under no circumstances plant second or third-sized trees. The largest grade, while somewhat more expensive as a rule,



Planting an apple tree

sequently the trees take hold in the soil more quickly and start growth sooner.

Recent investigations emphasize the importance of planting only the more vigorous growing trees. Such trees grow better, are healthier, and produce better crops than the less vigorous trees. The differences which we see in the size and productivity of mature trees are now believed to be largely due to differences

will on the average produce the best results. In the case of apples and peaches, it is desirable to use one-year-old trees that are at least four feet high. Purchase only well-grown, vigorous, straight and healthy trees, free from insects and diseases, with a strong, vigorous root development and true to name.

Treatment of Trees Upon Arrival

On receiving a shipment from a

nursery, it should be unpacked at once to note the condition of the trees. Care should be exercised not to expose the roots to the sun, air, wind or frost, for they will soon become dried out. Many trees are killed between time of delivery and planting in the orchard by allowing the roots to become dry. If they have become dry (the bark showing signs of shrivelling) due to delay in transit or to exposure, the roots should be placed in water over night, and the following day the entire trees should be buried in damp soil for a few days until they become normal, when they may be planted out or heeled in for future planting. If the trees have been frozen in transit, place them in a cellar until thawed out, when they may be unpacked and heeled in until ready for planting. Trees treated in this manner rarely show evidences of injury from having been frozen.

After arrival, if planting is to be deferred, the trees should be heeled in. This is accomplished by making a trench 20 inches to two feet deep, throwing the dirt forward so as to make a sloping bank on which to lay the trees in a slanting direction, with their roots in the trench. The trees should be placed in thin layers. After working the soil in well around the roots and tops, packing the dirt firmly, the second trench is dug farther back and handled in the same way. As many trenches as are necessary to accommodate all the trees are made. When there is no danger of freezing, drying out or rabbit injury, only the roots need to be covered.

In those sections where planting is delayed until late in the spring, the trees may be maintained in a dormant condition by digging up and heeling in a second, and in some cases, even a third time. This treatment prevents or destroys the growth of young roots and maintains the tree in a dormant condition.

Time of Planting

The time of planting of trees in the orchard is one on which not all horticulturists and fruit growers are in accord. However, a careful study of recommendations makes it evident that for the most part spring planting is preferable in the north and fall planting in the south. The season of transplanting seems to be dependent upon sectional conditions, with recommendations favoring spring transplanting in northern and colder sections of the country, while in the southern and milder sections of the country, fall transplanting has been found to be more desirable. In the northeastern part of the United States, recommendations are for planting in the spring as early as the soil is in good condition to work. For the north central division of the United States, the early spring recommendation seems to rule. In the lower central states and in the southern states, fall planting is recommended. However, late fall gives better results in most cases than early fall. In the semi-arid western states, spring planting is desirable. In the Pacific Coast states, from the last of December until the first of April

(Continued on page 10.)

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Peach Borer Control in Southern Sections

by Oliver I. Snapp

United States Department of Agriculture

GASSING peach trees with paradichlorobenzene for peach borer control has rapidly increased in popularity in the South during the last three years. A large percentage of the growers in the Georgia Peach Belt and other peach growing sections of the South have now adopted the treatment, and the use of the chemical has become an annual practice in the program of orchard management. During the season of 1921, a quarter of a million pounds of paradichlorobenzene were used in the southeastern states for peach borer control. During the following season about the same amount was used. Last fall it took 500,000 pounds of the material to supply the demand in the Southeast. These figures are indicative of the increased interest in this new method of borer control, and of the satisfactory results that have been obtained from its utilization in southern commercial peach orchards.

Injury From Paradichlorobenzene

During the past spring some reports of tree injury from the use of the chemical in the South were received in different sections of the country. A few of these reports were well founded, as the weather conditions in southern latitudes were very favorable for rapid action from the chemical when the paradichlorobenzene treatments were made last fall, and this caused some injury when peach trees three years of age or younger were treated. However, a majority of the reported cases of tree damage in southern peach orchards last spring resulted from winter injury. A minimum temperature of seven degrees above zero was recorded at Fort Valley, Ga., on January 6, after several weeks of abnormally high temperature, and as a result much winter injury to peach trees of various ages has been observed in different sections of the South. In many cases growers confused this injury with injury from paradichlorobenzene, and as a result, paradichlorobenzene has received considerable unjust criticism.

On the other hand, some of the injury to trees three years of age and younger had resulted from the use of paradichlorobenzene last fall and the blame for the injury was correctly attributed by the growers in the South to that chemical. It is the purpose of this article to give to peach growers the directions for the use of paradichlorobenzene under southern conditions as formulated from several years of extensive experimental work with the material in

that latitude, and to warn them that under some southern weather conditions paradichlorobenzene will injure young peach trees.

Paradichlorobenzene Injury vs. Winter Injury

Paradichlorobenzene injury is readily distinguishable from winter injury by one familiar with both types of

stages, the injury will extend up into these lower laterals. Shortly after this stage is reached the tree usually dies.

There is no flecked condition of the bark layers with winter injury. The cambium discolors and sours and the bark becomes loose. Often it can be torn from the hard wood with the hand. Severe injury to the cambium



Three-year-old peach trees in a Georgia commercial orchard killed by the use of the three-fourths ounce dose of paradichlorobenzene

injury. Mild cases of paradichlorobenzene injury take the form of small flecks in the outer bark layers. This is commonly referred to as "peppering" of the bark layers. With more severe cases of paradichlorobenzene injury, one finds these flecks in the bark layers converging into brown sour spots, and with very severe injury these brown sour spots will be found through all bark layers into the cambium. Since the gas from the paradichlorobenzene crystals is much heavier than air, which causes it to descend, all paradichlorobenzene injury is found below the soil level where the chemical was placed. This in itself makes it easy to distinguish from winter injury.

In the case of winter injury, the damaged condition of the tree will be found from the soil level upward toward the first laterals, and in later

layer from paradichlorobenzene is very similar to cambium injury from winter weather conditions; however, the paradichlorobenzene-injured cambium will always be found beneath the level where the crystal ring was placed, whereas the winter-injured cambium is found above ground. As is the case with a severely winter-injured cambium, a tree will soon die when the cambium injury from paradichlorobenzene has completely girdled the tree.

Weather Conditions Favorable for Paradichlorobenzene Injury

Temperature and moisture greatly influence the rate of evaporation of paradichlorobenzene crystals. The higher the temperature and the dryer the soil, the more rapid is the generation of the gas, and consequently the more concentrated is the gas around

the tree when such conditions occur. During the month of September, 1923, a precipitation deficiency occurred in Georgia which caused the soil to be exceedingly dry when the material was put out in October. During the three weeks following the application, practically no rainfall occurred. Therefore, a drought occurred before the paradichlorobenzene was applied in Georgia in 1923, and continued for three weeks following the application. The mean soil temperature during October, 1923, in Central Georgia was at least five degrees above normal. The weather conditions were therefore very unusual in Georgia last fall, and were favorable for an exceedingly rapid generation of paradichlorobenzene gas.

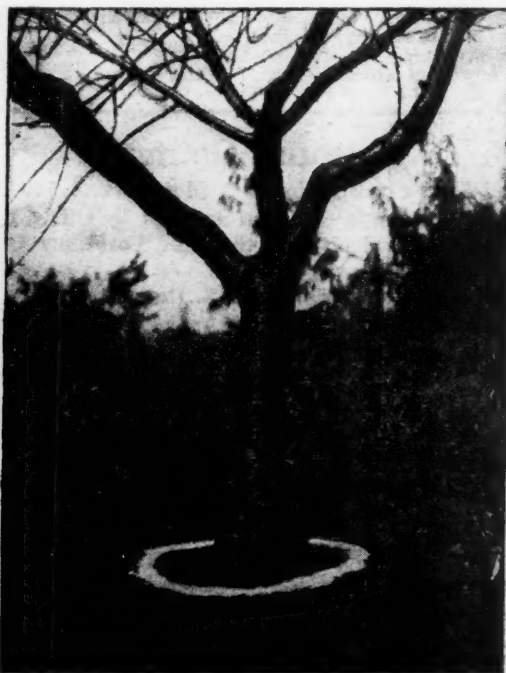
The rapid action from the gas last October, brought about by the unusual weather conditions, caused more or less injury to young peach trees. Some of the three-year-old trees in the experimental orchards were killed by the use of the three-fourths and one ounce dose for a four weeks' exposure. Similar results were experienced in several commercial orchards where three-year-old trees had been treated. More or less flecking of the bark layers and cambium injury was discerned in the two-year-old experimental orchards from the one-half and three-fourths ounce doses. Four and five-year-old trees in the South have always withstood with no discernible injury the three-fourths ounce dose for four weeks. Even with the very unusual weather conditions last fall, trees of these ages so treated showed no injury. With the present experimental evidence in hand, we must conclude that paradichlorobenzene is not safe for use on one, two and three-year-old peach trees in the South, and southern peach growers are warned against the use of the chemical on trees of those ages.

Directions for Using Paradichlorobenzene in the South

If paradichlorobenzene is applied properly at the right time, as specified in the following directions, a 90 to 100 per cent control of the peach borer may be expected. If these directions are not carefully followed, particularly as to time of application and level of crystals, poor results will follow.

When to Apply

Peach growers in the latitude of Tennessee and North Carolina should apply the chemical between September 15 and 25. Those in the mountain (Concluded on page 34.)



Methods of applying paradichlorobenzene. Left—too close; center—too far from tree; right—proper distance

Satsuma Orange Industry on the Gulf Coast

by O. F. E. Winberg

THE development of the Satsuma orange industry in the Gulf Coast states within the past few years has been one of the outstanding events in American horticulture. No person has had more to do with this development, or is more competent to give authentic information regarding it, than Dr. O. F. E. Winberg. We are therefore pleased to present this article by him on this interesting subject.

THE SATSUMA orange belongs to the Mandarin group of citrus. It was introduced from Japan to the United States in 1869 and planted as a door-yard tree mostly in central Florida. This fruit was not considered of commercial value in the early years after its introduction. It was first planted on the Gulf Coast in 1897 by Mr. Legere on his farm south of Mobile. The following year, Samuel White made a small planting at Battles Wharf, Ala., on the eastern shore of Mobile Bay. The Satsuma, however, was not planted for commercial purposes until 1909, when a few groves were planted. From then on, the plantings rapidly increased until, at the end of 1923, the acreage on the Gulf Coast amounted to approximately 18,000 acres.

As this industry was a new venture in horticulture on the Gulf Coast, it follows that the growers had many obstacles to overcome before it became fully established.

Discovery of Citrus Canker

The first serious obstacle to the expansion of this industry was the introduction of citrus canker (a bacterial disease) from Japan in 1912. No one attached much importance to this disease until the winter of 1914 when Dr. W. E. Berger of the University of Florida made a tour through Alabama, Mississippi, Louisiana, and Texas and found this disease prevalent. It was more serious in Alabama than in the other states. It had then already begun to make serious inroads into Florida, attacking grapefruit, as well as other varieties of Florida oranges which apparently were more susceptible than the Mandarin type on the Gulf Coast.

In the summer of 1914, the growers in Alabama and Mississippi, recognizing the danger confronting the industry by reason of the presence of this disease, began to discuss ways and means of combatting it. In August of 1914, the Gulf Coast Horticultural Society was formed in Mobile, with W. H. Reynolds as its president. From that time on an organized effort began for eradication of citrus canker. The growers were assisted by the State Experiment Station, and by the horticulturists of the Louisville & Nashville and the southern railroads, all of whom devoted much time in determining the spread of the disease and studying ways and means of combatting it. At that time it was not known whether it was a fungous or a bacterial disease. At the annual meeting of the Gulf Coast Horticultural Society in Mobile in April, 1915, the announcement was made by Dr. Karl F. Kellerman, associate chief of the Bureau of Plant Industry, Washington, D. C., that the plant pathologist, Miss Clara Hasse, had isolated the bacterium. At this time the government, recognizing the danger to the citrus industry in the country, lent financial aid to the growers on the Gulf Coast, to which was added contributions from growers and business men, and the first campaign looking towards the control and eradication of the disease was inaugurated.

Legislation for Fighting Canker

At the annual meeting of the Horticultural Society in Mobile, the writer was elected president. On June 23, 1915, he called the directors of the Society to Mobile for the purpose of considering the drafting of a bill to be introduced in the Legislature in Alabama the following August, looking towards not only financial assistance from the state of Alabama, but also a quarantine law whereby the state would have the right to enter properties infected by citrus canker and take such measures as were deemed necessary. This bill was introduced in the Legislature and \$25,000 was asked, for the specific purpose of citrus canker eradication. The bill had the unanimous support of citrus growers, as well as state officials, representatives from Mobile and Baldwin

counties and the Horticultural Society, which sponsored the bill, together with the officials of the agricultural college at Auburn. The Legislature passed the bill, but, unfortunately, the appropriation asked for was greatly reduced. However, horticulture on the Gulf Coast had gained one important point, the quarantine law.

Federal Aid Secured

In October of the same year, at the Citrus Seminar held at Gainesville, Fla., a committee of five was appointed, consisting of such able men as William Newell, D. C. Gillett, Loyd Tenny and others. This committee met with officers and others of the Gulf Coast Horticultural Society in Mobile in the fall of 1915 to discuss ways and means of securing Federal aid, as it was then fully apparent that the states alone could not cope with the situation. As a result of this united effort, and the fact that the officials of the Department of Agriculture recognized the danger confronting the citrus industry in the United States, and the unanimous support given the measure by a majority in Congress, the bill passed providing for sufficient funds to start a vigorous campaign, looking toward the eradication of the disease. The eradication work was under the direction of the associate chief of the Bureau of Plant Industry, Dr. Karl F. Kellerman, in co-operation with the respective states involved.

Organizing the Campaign

In the spring of 1916, after an agreement had been entered into between the state of Alabama and the Federal Department of Agriculture, the writer was requested by the Board of Horticulture of Alabama to assume direction of the eradication work in that state, and was recommended to the Department of Agriculture and shortly after was appointed by the Bureau of Plant Industry to take charge of this work. The eradication campaign was promptly organized and a corps of men was put to work.

Hurricane Spreads the Disease

On July 5, 1916, a severe hurricane swept over the Gulf Coast section, accompanied with heavy rains. This was the means of spreading the disease, and where only 10 per cent of the citrus groves in the citrus belt of Alabama were infected with citrus canker, less than a month after this storm 50 per cent of the plantings in Alabama were infected. The number of men was increased so that there were 100 engaged in the work in Mobile county and 30 in Baldwin county, Ala. Methods employed were the actual destruction of the infected trees by fire and disinfecting the non-infected trees. A vigorous campaign carried on that year resulted in a reduction of the disease by 75 per cent. In the year 1917, the disease was again reduced, and so on, year after year, until now we are justified in stating that the citrus canker has been completely eradicated in Alabama, at a comparatively small cost. The hurricane that swept over the

Gulf Coast section in 1916 reduced the Satsuma crop 60 per cent, and what remained on the trees and actually did mature was of inferior quality insofar as appearance was concerned because of injuries suffered in the storm. On November 14 of the same year, the temperature went down to 26 degrees above zero, damaging the fruit on the trees. Only 35 carloads were marketed that year, and because of the poor quality of the fruit, the prices were low, although as high as could be expected considering the adverse conditions.

Not only was the fruit damaged in the storm of July, 1916, but the trees, being subjected to a hurricane with a wind velocity of 100 miles an hour, were practically defoliated and did not recover their vitality that season, and the following winter (1917) the trees, in the weakened condition they were in, suffered still more, so that the crop in 1917 was reduced to a minimum. Only a total of 11 cars was harvested and shipped from the citrus belt on the Gulf Coast. Since then, however, there has been a rapid increase in production.

It is to be noted that from the small beginning of commercial plantings in 1909, the industry had grown to a conservative value in orchard properties at the end of 1923 of \$8,000,000. The crop in 1914 netted the growers \$4000, while the 1923 crop netted the growers over three-fourths of a million dollars.

Creating a Market for Satsumas

Early in 1914, it became apparent to the leading orchardists that as the Satsumas were approaching commercial production we had to face the problem of introducing into the markets an unknown fruit. Therefore the question of organizing the industry was the problem needing attention. A few of the leading growers, including the writer, held several conferences during the winter of that year, which finally resulted in an organization for the purpose of marketing, standardizing, etc. In May of that year, the organization was perfected, consisting of six members, Dr. W. H. Ludwig, of Foley; A. M. Troyer, of Fairhope; C. M. Seever and Theodore Hunt, of Robertsdale; L. T. Rhodes, of Bay Minette, and O. F. E. Winberg, of Silverhill, all of Baldwin county, Ala.

Standard boxes were provided for, the fruit was properly packed and sized and the marketing of the small crop that year was a success. In 1915 a conference was held in Mobile between growers of Mobile and Baldwin counties and Mississippi. The result was the formation of the Gulf Coast Citrus Exchange, which was finally incorporated in June of that year as a non-profit, non-stock organization. In the fall of 1915, the entire crop on the Gulf Coast was marketed co-operatively through the Gulf Coast Citrus Exchange. The Exchange has grown from six members in 1914 to 900 in 1924.

Industry Organized for Production Also

At the time the industry was organized for marketing and standardi-

zation, etc., it was also organized for production. The Citrus Exchange and the Horticultural Society on the Gulf Coast, realizing that successful marketing of a commodity cannot be done unless the growers co-operate for the purpose of producing a first-class fruit, concerned themselves with educational work, looking toward proper control of insects and diseases affecting the quality of the fruit, and also in the purchasing of fertilizer materials best suited for quality production of fruit, bearing in mind also that purchasing co-operatively on a cash basis gives the grower members of the organization the benefit of lower prices. Many thousands of dollars have been saved the growers each year by this system.

In 1918, realizing that the insecticides used by the growers were held at too high a price by the wholesaler and the retailer, the Exchange decided to manufacture their own spray material. Thus the oil emulsion that is primarily used in the control of scale insects and white fly by the citrus growers on the Gulf Coast was reduced from \$1 a gallon to 50 cents, until in the summer of 1923, when it was reduced to 30 cents a gallon to the growers. Copper sulphate and lime sulphur were bought co-operatively in large quantities at wholesale prices.

The Horticultural Society has carried on educational work in holding meetings during the year in various localities in the citrus belt. At these meetings authorities on citrus culture and allied subjects have delivered lectures to the growers, and spraying demonstrations have been conducted in various parts of the citrus belt. These meetings and demonstrations have done much towards perfecting a system of insect and disease control that has aided materially in producing a uniform and high grade fruit throughout the territory.

Varieties of Satsumas Grown

The Satsuma oranges grown in the United States are of two very distinct varieties, the Owari being the one that is grown most extensively. Its principal characteristic is its thin, smooth skin and its earliness in ripening. Under normal conditions, it reaches maturity the first part of October. The Ikeda, having a little thicker and coarser skin, ripens about two weeks later than the Owari. In the eating quality of the two varieties, there is no difference, nor is there any difference in production as one is as heavy a producer as the other.

In 1917, the Bureau of Plant Industry, through T. Ralph Robinson, L. B. Scott and Dr. Tanaka, began a systematic study of the varieties because in the early years of planting, in fact, up to 1917, the growers had paid no attention to the difference in the two varieties. Therefore, one orchard probably had the Owari variety and another the Ikeda and it became necessary that these two varieties be segregated in order to obtain a uniform pack. A large number of orchards were examined by the experts mentioned and the growers' attention was called to the difference in the appearance and shape. This work continued for several years until now the difference between the two varieties is well recognized by the growers.

Performance Records of Individual Trees

Through the aid of T. Ralph Robinson and L. B. Scott, of the Bureau of Plant Industry, Washington, D. C., it has become possible to introduce a system of keeping performance records in the Satsuma orchards.

It has long been recognized that variations exist in Satsuma orange varieties, both in regard to the characteristics of the fruit and the productivity of trees. Even in the same orchard where the trees are the same age and have been given similar treat-

(Concluded on page 24)

American Fruit Grower Magazine

Established 1880.

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Reconstruction Not Yet Complete

WHEN I was a youngster in the grade schools, I thought the histories made altogether too much fuss about the reconstruction period following the Civil War. It seemed to me that all that was necessary was for the soldiers to lay down their guns and go home and go to work.

As I have grown older, and especially in the last few years, I have come to see that there is really something to this reconstruction matter after all. The fact is that during a period of peace nations establish, both within themselves and with other nations, a sort of economic equilibrium or balance. It is true, of course, that this balance may not be entirely equitable for all nations, classes and individuals, but nevertheless, a fairly equitable balance exists, allowing, of course, for the subsidies and special privileges and advantages which some groups enjoy.

When war breaks out, this economic balance is suddenly broken. Large masses of people change their occupations abruptly. Capital is diverted to new channels. A lot of artificial rules and regulations are put into effect.

Things go along fairly well during the war, because of the artificial rules and regulations, the fact that everyone is kept busy, and the urge of patriotism. But suddenly the war ends and with it comes a still more severe jolt to our economic balance. The artificial rules and regulations are set aside. Price setting, if any has occurred, is discontinued. Capital again seeks new outlets. Large numbers of people again change their occupations. Different conditions exist from those existing before the war. It is easy to see that following the war the economic status of nations and of individuals is left entirely out of balance.

Now in our competitive system of society, a readjustment must take place in the years following the war. We must again reach the economic balance that existed before the war, or, rather, we must reach a balance under the changed conditions that exist following the war. This would not be so difficult were it not for the people themselves. Certain groups are placed in advantageous positions by every war, and naturally they do

everything they can to retain those advantages as long as possible. Those groups which have suffered economic disadvantages from the war strive to have them corrected. The struggles which follow delay the settlement of reconstruction problems.

The World War was a most serious one, indeed, and we must not expect the difficulties to be settled too soon. The fact is that it will take some time to re-establish our proper economic balance.

Some persons thought there would be no slump following the war because of the peculiar position which the United States occupied. When the slump of 1920 came and conditions began to show improvement, many thought that we had passed through our difficulties and were on the high road to prosperity. Quite a few people are now believing that in view of the better agricultural conditions, an era of prosperity awaits us and that the reconstruction period is practically ended.

The writer does not believe we have yet settled down into an economic balance. There are many problems yet to be solved, and it will take time to do this. Certain fundamental readjustments must be made, and they will be made. Progress is taking place and it looks as though reconstruction might be accomplished without any panics, thanks to a sound national banking system, but we must not expect it to occur without some disappointments and some suffering.

Fruit growers and farmers should be careful not to be led into a position of false security by the favorable price conditions which exist for farm products at present. We must remember that the American farmer has tremendous producing power under the urge of good prices. Furthermore, we may have a favorable season next year. It certainly is altogether unlikely that we shall have another season like the present one. With the return of increased production, we may, in a short time, be virtually back in the position we occupied a year or two ago. The present favorable situation is due to the world food supply conditions and not to a full settlement of our reconstruction problems.

We should, therefore, expect some little time to elapse before our reconstruction problems are fully solved. In the meantime, we can best face the future by putting ourselves in a spirit of patience and confidence; by using common sense, discretion and conservatism in our undertakings; by adopting a spirit of fair-mindedness; by studying agricultural problems and supporting movements which are fundamentally sound; and by each one of us performing our daily work in a thoroughly efficient manner.

Roadside Marketing Abuses

THE TREMENDOUS extension of hard roads into the rural communities is bringing city people into the country further and oftener than they ever went before. These circumstances have opened up new and excellent opportunities to fruit growers through the avenue of roadside marketing.

Those of us who must live near large cities and who patronize roadside markets whenever possible, have been much interested in their progress. Some of them are conducted along what we should call good lines, while others are not.

The general principles covering the development and operation of such markets were described in an article in the September issue, but there is one feature in the conduct of some of these markets which was not mentioned in that article and which we want to give attention to. Many of these markets are conducted in excellent fashion, but now and then one is found which charges exorbitant prices for the products. Not infrequently higher prices are charged in some of the roadside markets near Chicago than similar prod-

ucts can be purchased for in retail stores. An automobilist will usually buy after he has stopped even though the prices are unsatisfactory, but this does not prevent him from going away dissatisfied.

It would not be a serious thing if the matter stopped here, but, unfortunately, it does not. Consumers, as a class, have been quite sympathetic with the growers' cause the past few years, but when one of them gets "stung" in the manner described, he immediately loses his sympathy and does not care thereafter what becomes of the growers. His first step is to quit buying from such markets. Furthermore, he tells his neighbors, and he becomes generally unsympathetic toward the growers' cause. Thus his influence may be of far more significance than the loss of his trade.

Growers who market in roadside stands should bear in mind that besides looking out for their own interests, they are in a general way representing the growers all over the country. If they make a good impression, buyers will think favorably of growers in general. If they give dissatisfaction, buyers will carry away an unfavorable impression. Consumers cannot expect growers to sell in roadside markets at wholesale prices, but it does seem that the prices should be within the average of the retail prices, and in many cases they should be somewhat lower. Roadside marketing, properly conducted, affords an excellent opportunity for growers, but they should be careful not to abuse the proposition by charging unreasonably high prices.

Our Prize Contest Continued

IN THE June issue we announced a prize contest for stories and pictures of the homes and home life of our subscribers. A considerable number have been received but not as many as we hoped for. Possibly our readers have been too busy to give attention to this matter.

We are taking the liberty to extend the contest until November 1. Remember, it is pictures showing the home surroundings and conveniences that we want, the things which promote better living and help to bring about a fuller life. Do not think that because you do not have the biggest and finest house in the community that there is no use in trying to win in this contest. Quite often small, humble homes are better arranged and better equipped for real honest-to-goodness living than the palatial places. Besides, the other folks may not send in pictures and stories.

You will not need to write a whole volume. Make your story brief and to the point. Nor need you write about all your conveniences. Any one of them will be sufficient. For instance, if you have a lawn or shrubbery that you are proud of, a fine vegetable or flower garden, a well-arranged and equipped laundry room, a handy kitchen, a cozy living room, or an efficient water or power plant, tell us about it and send some pictures along with your story.

The stories and pictures will be judged by a competent committee and the best ones will be published in the magazine in our winter issues. For first prize, we shall give \$25, for second prize, \$15, and for third prize, \$5. In addition, \$1 will be given for each picture that we can use in other connections.

Study the Issues, Then Vote

DURING the next month, it is the duty of every one of us to study the issues of the campaign and the men seeking election, so that on November 4 we can vote intelligently. If there ever was a time when wise voting was needed, it is now. Especially is this true from the standpoint of agriculture. Study the issues and the candidates and then vote!

Rambles of a Horticulturist

by C. E. Durst

THE WRITER joined the tour of the American Pomological Society in the Hudson Valley section of New York and continued with it to the end. The following are some of the chief impressions carried away as a result:

The growers of the Hudson Valley, about 200 in number, met at the home of Clarence Miller at Claverack. After eating dinner on the beautiful lawn, various authorities addressed the meeting, including Prof. M. A. Blake, Dr. L. H. MacDaniels, Prof. H. B. Tukey, Paul C. Stark and the father of G. Harold Powell. A short trip was then taken through the orchard, most of which is young trees. Mr. Miller, being commercially interested in the manufacture of lime, has limed his ground well and has excellent cover crops of clover and alfalfa.

Prof. Tukey, who is located in the Hudson Valley section, told how cherries had been kept on the trees for several weeks after the normal season by occasional dusting. The fruit keeps well for a long time if protected against brown rot in this way, and thus advantage can be taken of improved marketing conditions after the bulk of the crop is out of the way. A demonstration was given of the new method of poisoning woodchucks by means of sodium cyanide.

Connecticut Visits

The first visit in Connecticut was made at the Conyers estate, Greenwich, where George A. Drew is manager. This is a wonderful orchard, one of the best in New England. Mr. Drew was formerly on the staff of the Massachusetts Agricultural College. The orchards have been developed entirely under his management. The place consists of 1432 acres, 325 of which are in orchard, consisting of apples, peaches, pears, plums and cherries. The elevation is from 300 to 400 feet. The Long Island Sound and Gulf stream exert considerable influence and for that reason peaches are quite successful on the average. In an orchard nine years old, four peach crops had been secured. Pears are grown in larger quantity in this orchard than in any in New England. The Bartlett and Bosc are considered best. Of apples a large number of varieties is grown. The McIntosh, Duchess and Baldwin give best results. The Duchess, in Mr. Drew's opinion, is excellent for cross pollinating a wide range of varieties.

The original plantings of apples were quite close. Mr. Drew has removed some fillers as old as eight years and started new orchards from them successfully. The trees were well pruned and had fairly open tops, thus the fruit was well distributed over the trees and of good color. The Oriental Peach Moth, Japanese beetle and psylla were doing considerable damage, but the psylla was being controlled readily because none of Mr. Drew's neighbors grow fruit.

Mr. Drew's marketing methods were interesting. A large cold storage plant permits the apples to be kept all winter. A large quantity is sold through the season from the stand on the place, the sales sometimes reaching \$2000 a day. Arrangements have been made with truck owners who haul materials from New York to haul back fruit on their return. Mr. Drew has a single dealer in New York. All fruit is sized on a rebuilt Burke grader. As much as \$125,000 worth of fruit has been sold from this place in a single season.

Field Day at Mt. Carmel

The next stop was at the experiment farm at Mt. Carmel, where a field day was being held. After an excellent dinner, speeches were made by several New England leaders and members of the Pomological tour.

The next visit was made at the orchard of W. A. Henry, son of Dr. Henry of Wisconsin, author of "Feeds and Feeding." Mr. Henry has 175 acres in fruit. He has 20 acres of

cherries, on which he has made good money. He has excellent clover cover crops in his orchards. He tried bees but discontinued them and could see no reduction in fruit setting as a result. Mr. Henry's orchard is on high land and instead of hauling spray material up-hill, over soft ground, he

came as a breaker of the long dry spell, a most valuable visit was made to the Rogers orchards at Southington. The orchards are operated by Elijah Rogers and his son, the latter a college graduate. The orchard consists of 250 acres of apples, pears and peaches. Part of the orchard was



Sixty-year-old Baldwin orchard in Rhode Island

pumps the water through underground pipes to elevated tanks distributed through the orchard.

Judge J. A. Martin has 85 acres in fruit, which shows excellent condition. He prefers the McIntosh apple, but also likes the Baldwin, Greening and Fall Pippin. He sold \$45,000 worth of fruit in one season, \$40,000 of which was handled through one dealer in Bridgeport.

A brief inspection was made of the Barnes Bros. Nurseries.

The Rogers Orchards

Notwithstanding a rainy day, wel-

planted over half a century ago by the late J. H. Merriman, charter member of the Connecticut Pomological Society. Practically all New England growers place the McIntosh apple first, but the Rogers prefer the Baldwin. They would plant the Baldwin exclusively were it not necessary to use other varieties for cross-pollination. On the Rogers place was brought out very forcibly the healthfulness and old age reached by apple trees in New England, which feature was frequently manifested throughout the trip. Out of an original planting of 500 Baldwins made 78 years ago,

100 of the trees are still alive. Most of these old trees are in excellent condition and last year bore as well as any trees in the orchard, taking into account that the bearing wood is more or less removed from the trunks and therefore less abundant than in younger trees. The apples on the Rogers place were conspicuous for their glossy surface, indicating a high finish, resulting from good growing conditions. Good crops of Wealthy are obtained on five to six-year-old trees and Duchess on four to five-year-old trees.

The Rogers grow a lot of peaches and have secured nine good crops in 10 years, which is considered remarkable in view of their distance inland. The result is attributed to the influence of the New Britain reservoir nearby. Trees four years from the bud were of extraordinary size. Some three-year-old peach trees were bearing a fairly good crop, due to light pruning and little or no heading back. Several varieties of peaches are grown. Elberta is considered best, but it is one of the tenderest in the dormant bud condition. Some Hales are grown, but they are always interplanted with Elberta in order to secure cross pollination.

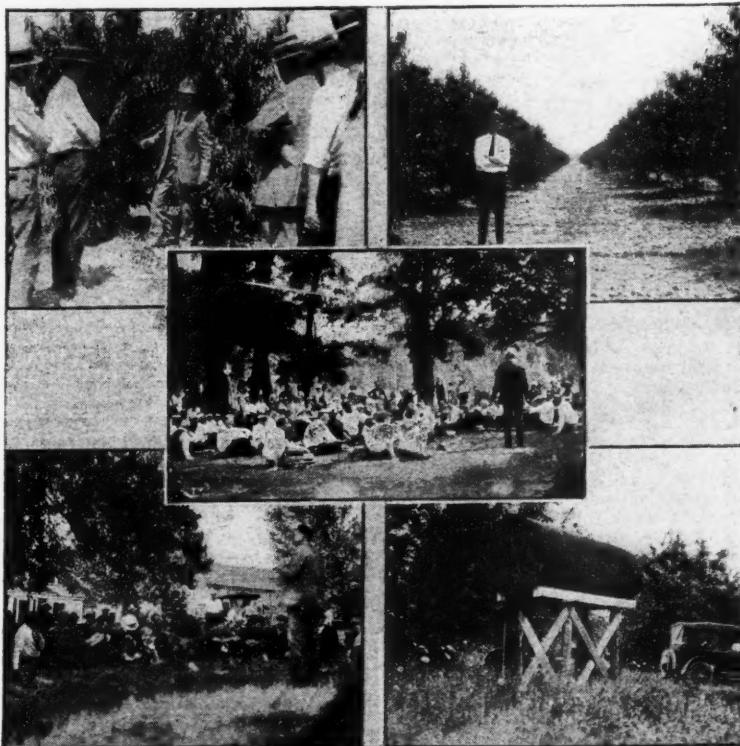
Apple scab and aphids have been quite serious. Scale is prevalent but is held in check by the cold winters. A large amount of top-working has been done. In common with other good New England growers, the Rogers use fertilizers liberally, consisting of manure, tobacco stems, nitrate of soda, sulphate of potash, bone meal and nitrate of potash. The latter material, obtained from Chile, was believed to be yielding excellent results. Prof. S. P. Hollister, of the Storrs Experiment Station, believes that nitrate of potash is valuable both as a source of potash and for increasing color in apples under some conditions in Connecticut.

A day was spent in Rhode Island, where Paul Stark ate too much sea food at the shore dinner. Several excellent orchards were visited. In one of these, whose owner's name the writer did not get, there was practically a full stand of those grand old Baldwins in an orchard 60 years old. There were other Baldwins on this farm over 100 years old, which were still bearing fruit. Like practically all other New England growers, the Rhode Island growers prefer the McIntosh.

The Marshall Orchards

A hasty visit was made to the orchard of George A. Marshall, Fitchburg, Mass., which is believed by many persons to be the best kept orchard in America. The buildings and surroundings are a model of neatness and finish. The orchard consists of 100 acres, all in wonderful condition. There were evidences of heavy bearing on every hand. Fifteen-year-old apple trees were still somewhat small because of the heavy crops produced. The orchard produced about 30,000 bushels in 1923, and from 40,000 to 50,000 are expected in 1924. Mr. Marshall uses one and one-half pounds of nitrate of soda on the average tree and from four to 12 pounds of high-grade fertilizer per tree, depending on the size. Sod culture is practiced throughout. Pruning is done according to the modified leader system, fairly low and open tops being maintained. Suckers are removed in the summer. Scab and codling moth are the worst pests. The gypsy moth was quite serious seven or eight years ago but natural parasites appear to hold it in check now. The McIntosh apple is preferred, though Duchess, Wealthy, Delicious and other varieties are grown in quantity. All picking is done in baskets and the apples are transferred to lug boxes by hand. All fruit is sized over a Cutler grader. The better grades are marketed in standard bushel boxes, with cardboard bottoms and

(Concluded on page 28)



Seen on the American Pomological Society tour. Upper left—W. S. Ferrine, of Illinois, demonstrating pruning of peaches. Upper right—Young peach orchard in Jasper county, Ill. Center—Meeting at Claverack, N. Y., being addressed by the father of G. Harold Powell. Lower left—Dr. Karl Sax addressing New Hampshire growers on root stocks. Lower right—Example of water tanks in orchard of W. A. Henry, of Connecticut

Construction of Cool Storages for Apples

by C. E. Baker

Purdue Agricultural Experiment Station

THE VALUE of the farm apple storage is coming to be realized by fruit growers. Each year more and more growers are finding it to their interest to handle their low grade fruit in such a manner that it does not flood the market and compete with fruit of better grades. In years of large crops, the market often becomes glutted during the early part of the season, and the man who must dispose of his crop at once is forced to do so at a sacrifice. By holding the crop for several months, a much better market is often available.

Many growers have found it exceedingly profitable to hold a portion of their crop to meet the local demand throughout the season. This not only

up through the packing house, ending in some type of a ventilator above the roof.

Above ground storage houses are made of various materials, often chiefly of wood. With this type of house, it is necessary to provide thorough insulation, both against the heat of early fall and the low winter temperatures. This is accomplished by means of dead air spaces, sawdust, powdered cinders and manufactured insulating materials.

The false floor is generally built

If sawdust is used for insulation, it must be thoroughly cured and absolutely dry. Green sawdust is likely to heat, sometimes taking fire from spontaneous combustion. Even thoroughly dry sawdust takes up moisture readily and settles or rots. For these reasons it is probably best to avoid its use wherever possible.

Finely crushed cinders make a very efficient and inexpensive insulating material. They are fire-proof, do not rot and if properly packed, settle but slightly. Soft, powdery ashes should not be used. Whatever the insulating material used, care should be taken to protect it from dampness, as the presence of moisture greatly reduces the insulating efficiency of any material.

Several commercial products of high insulating efficiency are on the market and may be secured of dealers in building material.

Ventilation

The importance of ventilation in the cool storage house cannot be over-emphasized. Through ventilation, the temperature of the house is regulated, the waste products of the respiration of the apples are removed and fresh air is brought in. Successful ventilation presupposes the proper placing, construction and rate of air intakes and outlets.

Cool Air Intakes

There is still some question as to whether a considerable number of smaller inlets placed in various parts of the building, or fewer intakes of larger capacity, is the better type of construction. At any rate, the intakes should be 10 to 12 inches in diameter and so placed as to supply fresh air to all parts of the room. To be on the safe side, one inlet at least, 12 by 24

be composed of large tiles placed in the walls.

Lines of 18 to 24-inch tiles, leading from lower levels to the storage room, are often used as cold air inlets, but their advantages are often over-estimated. Under some conditions, this type of air intake works satisfactorily, but in other cases, it is all but useless. Dampers should be provided in all intake and outlet flues.

False Floors

A false floor is a necessity in connection with an efficient ventilation system. This should be high enough above the true floor level to permit thorough circulation of air beneath it, and it should be sufficiently strong to bear the weight of the fruit without strain. A very satisfactory false floor may be made by laying two by six-inch flooring, one inch apart, over two by eight joists, the joists resting on cement sills four inches high. This gives ample room for air circulation in all directions. To facilitate removal for cleaning beneath it, the false floor may be constructed in movable sections.

The Outlet Flues

The outlet flues should be at least 18 inches in diameter, and should leave the room at the center of the ceiling. Where there is a packing house above the storage cellar, the flues should proceed directly to the peak of the roof without bends or changes of direction. Round metal flues are perhaps the best, but they may be constructed from two thicknesses of one-inch wood with building paper between. A square flue is efficient only to the extent of the circle it encloses, due to the dead air spaces in the corners. All necessary cleats should be placed on the outside so as to leave the inside walls of the passage unobstructed. Outlet flues must be air tight as any air leaks act as a check draft on a furnace and

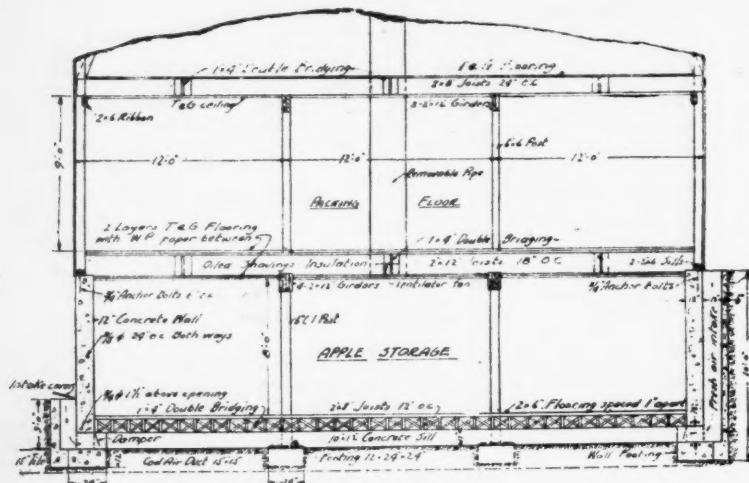


Figure 1—Section plans through end view of Bedford storage cellar, showing the position of air intake and outlet flues, construction of false floor and insulation of ceiling

affords them an excellent market for the inferior grades of fruit, but helps to develop a continuous local trade that can be depended upon year after year.

In most cases farm storages should be used only in connection with the lower grades of fruit. Due to the fact that low temperatures are difficult to obtain in the early fall months, it is usually best, when possible, to put the first-class fruit for which a satisfactory market cannot be secured, in cold storage at once. Where cold storage facilities are not available, however, the farm storage is almost indispensable. If ice may be secured at a reasonable price, its use during the few weeks directly following the harvest may add materially to the efficiency of the plant.

Types of Storage Houses

There are two general types of farm storage houses: the bank or cellar storage, and the above ground house.

In the bank type the storage cellar is generally built into a hillside in such a way that three sides and often the top, also, are covered by soil, using the ground as the chief means of insulation. Such cellars are generally made of stone, cement, concrete blocks or hollow tile, as wood soon decays, due to the large amount of moisture continually present.

Cold air intakes usually enter from about the ground level on the exposed side, carrying the cool air into the house beneath a false floor. For the best circulation of air, additional cold air inlets should be carried down at all corners from the ground level, opening beneath the false floor in the storage cellar. A large door is usually placed on the exposed side, which may be used to supplement the air intakes.

The warm air is removed through an outlet flue opening from the ceiling in the center of the house. One or more flues are used, depending upon the size of the cellar.

A packing house is often combined with this type of storage, building it directly above the storage cellar. In such cases the outlet flues are carried

two feet or more above the insulated ground floor. Cool air openings are left in the wall beneath the false floor, through which the air enters, passing up through the false floor. The warm air is removed from the openings at the ceiling, as in the case of the bank cellar. The intake openings are provided with suitable doors for closing when not in use.

Construction Details Essential

Both types of houses are efficient when certain details of construction have been observed, but without sufficient regard for these, no storage will be successful. Bank storage cellars are more common in the Middle West, and my remarks will apply primarily to that type, although the general principles outlined apply equally well to either type of storage.

Insulation

The first factor in successful storage construction is insulation. In underground cellars this is secured chiefly by the ground itself which surrounds the cellar wall. The walls should be at least 10 inches in thickness, and 12 inches is better. Additional insulation against ground temperatures on the enclosed walls, and frost in winter on the exposed side, may be advisable. This may be provided by placing an inner wall, composed of two thicknesses of one-inch tongue and groove material, with waterproof paper between, about two inches from the masonry wall, and filling the space between with crushed cinders or oiled shavings.

The ceiling must also be well insulated. If the roof is entirely covered with soil, the covering should be at least two feet in thickness. If there is a packing house above, the ceiling and packing house floor may be combined by placing double thicknesses of tongue and groove material, with waterproof building paper between, on either side of 12-inch joists, filling the space between the joists with crushed cinders or oiled shavings.

All doors, elevator shafts, or other openings, must be tight and as well insulated as possible.

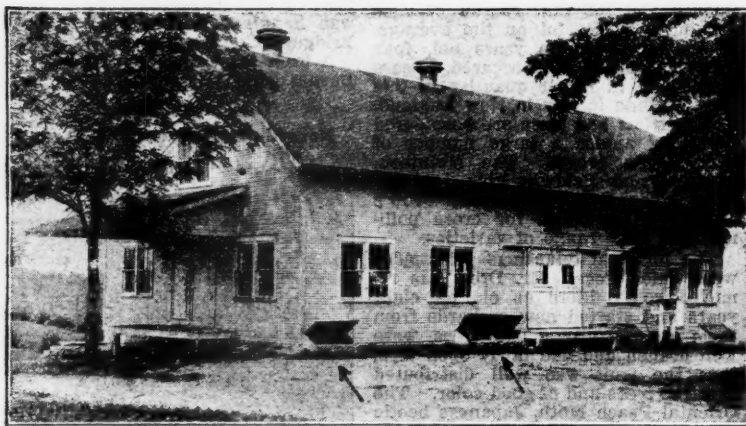


Figure 2—A demonstration basement apple storage and packing house built by Purdue University at Bedford, Ind. Arrows indicate openings into cool air intakes. Their construction is further shown in Figure 1. Notice also the warm air outlets at the peak of the roof

inches, should be provided for each 15 to 20 feet of wall. These should be equipped with dampers so that they may be operated independently of each other.

The outside openings into the air inlets should be as near the ground level as is practical in order to take advantage of the cool air near the ground. In underground cellars, the cool air inlet ducts are usually carried from the ground level down along the outside of the cellar wall, entering the storage just above the ground floor and well beneath the false floor. (See Figure 1.) Sometimes windows are made in the cellar wall just above the ground level and the conducting flues are built on the inside by boxing in a shaft from the window openings to a point well beneath the false floor. Either method furnishes satisfactory ventilation.

On the exposed side of the cellar, the air intake often enters directly to the cellar at the floor level and may

reduces the "pull" of air from the storage room. Fans and forced draft ventilators aid greatly in increasing the volume of air moved up the flue.

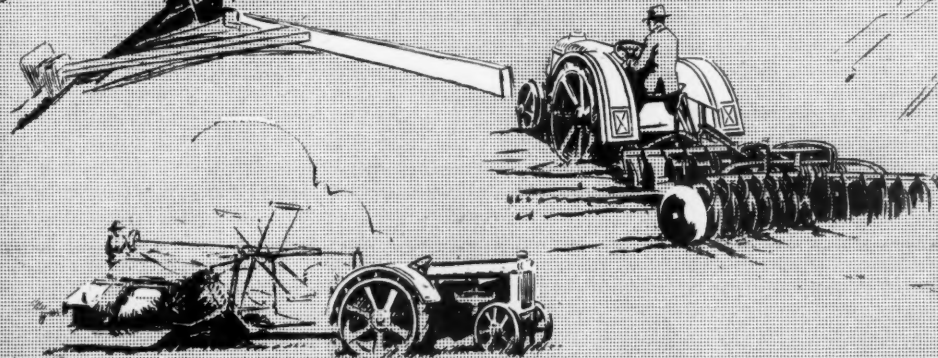
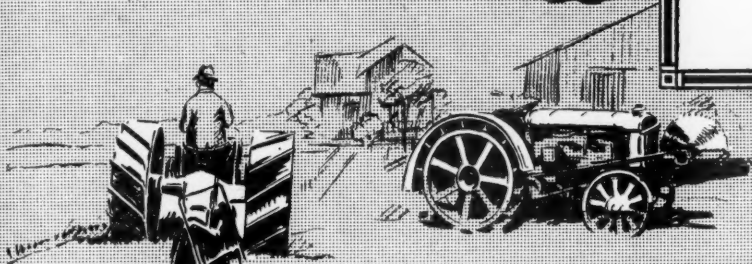
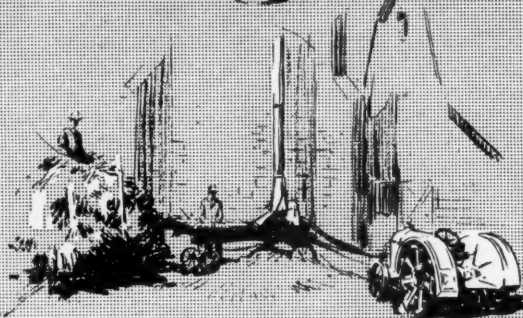
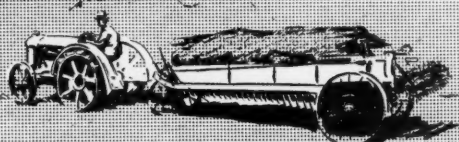
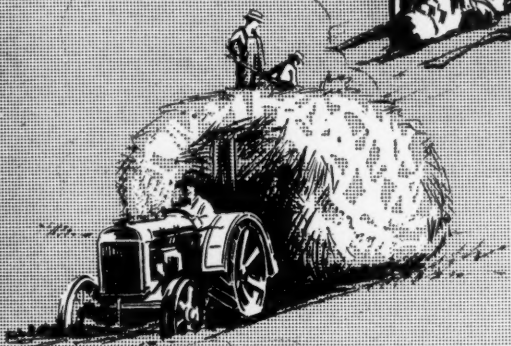
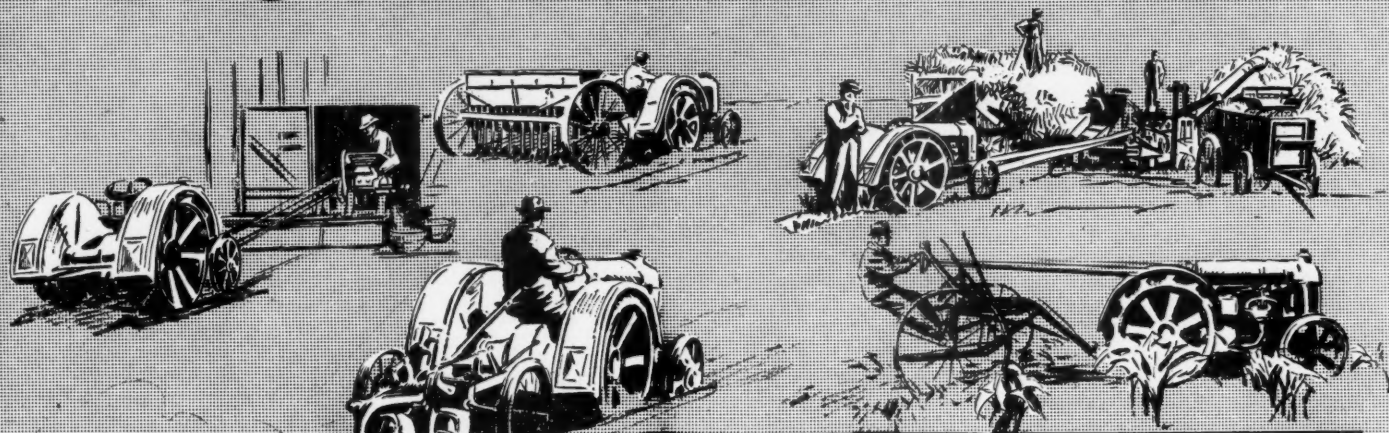
When the bank cellar is covered with soil only, the efficiency of the outlet may be increased by building it up 10 or 12 feet, thus creating a stronger draft.

Again there is no definite rule by which one is able to determine the size or number of outlet flues, but one flue 24 inches in diameter is usually considered sufficient for the equivalent of a room about 24 by 36 feet.

No floor is needed other than the slatted false floor. Cement floors tend to cut off the moisture supply to such an extent that if moisture is not supplied artificially the fruit will shrivel. With the natural dirt floor it is seldom necessary to add moisture, as the moisture coming from the ground is usually sufficient to supply about the proper humidity for the fruit.

(Concluded on page 30.)

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Successful Tree Planting

(Continued from page 3.)

seems to be the most desirable time for transplanting fruit trees. In those sections where spring planting is recommended, the reason consists chiefly in that the trees cannot be secured in a dormant condition in fall. Also the trees which are transplanted in the fall are more subject to root killing the following winter. In the semi-arid sections, the fall planted trees dry out during winter. The better condition of the soil in the spring is another reason for the recommendations governing spring planting. In climates where fall planting is desirable, it has been found to be a distinct advantage over spring planting be-

cause new root growth begins and the trees are somewhat established by spring.

Digging Holes

The hole in which the tree is to be set should be of sufficient size so that the roots may rest naturally without crowding or bending. The top soil should be put to one side so that the richest soil may be placed around the tree roots.

The use of dynamite in preparing the land for trees has both its supporters and those who do not deem it necessary. In most sections, however, it is not necessary. In some sections, if the ground is too wet, its use is decidedly harmful in that it compacts the soil. In those sections with hard

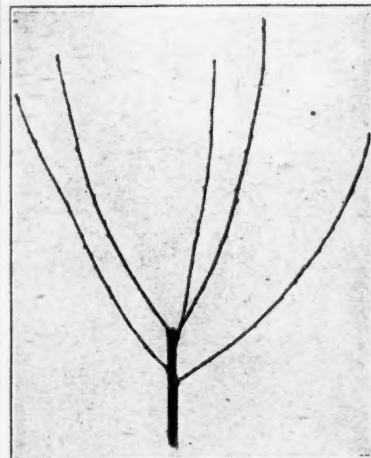
and impervious subsoil, the use of dynamite certainly lessens the amount of labor and has given good results.

Fruit trees should be set about the same depth as they stood in the nursery. On examining the trees, it will be found that the soil line on the trunks will show how deep the trees were in the nursery. This will serve as a guide to the planter in regard to how deep the holes should be dug. They should be dug deep enough, however, to permit the placing of some soft, fresh top soil in the bottom of the hole so that the tree roots may rest upon it. The best job of digging the holes and planting the trees can be done when the soil is in the best condition for plowing. If the soil is too dry, it delays the beginning of

root activity and causes the trees to suffer from drought. If the soil is too wet, the work is sticky and disagreeable and difficult to do properly. The work goes along more satisfactorily when the soil is in condition so that it can be easily squeezed into a ball without sticking to the hands.

Preparation of Trees for Planting

Before planting, or when pruning the roots, the trees should be carefully



Peach tree just set, before pruning

examined for insects and diseases. Reject trees infested with San Jose Scale or infected with the root gall disease. Trees that have only slight borer injury may be used, but if the injury is severe, the trees should be discarded.

Quite a number of different methods of root pruning have been suggested from time to time, but it is the consensus of opinion now that the



Peach tree just set, after pruning

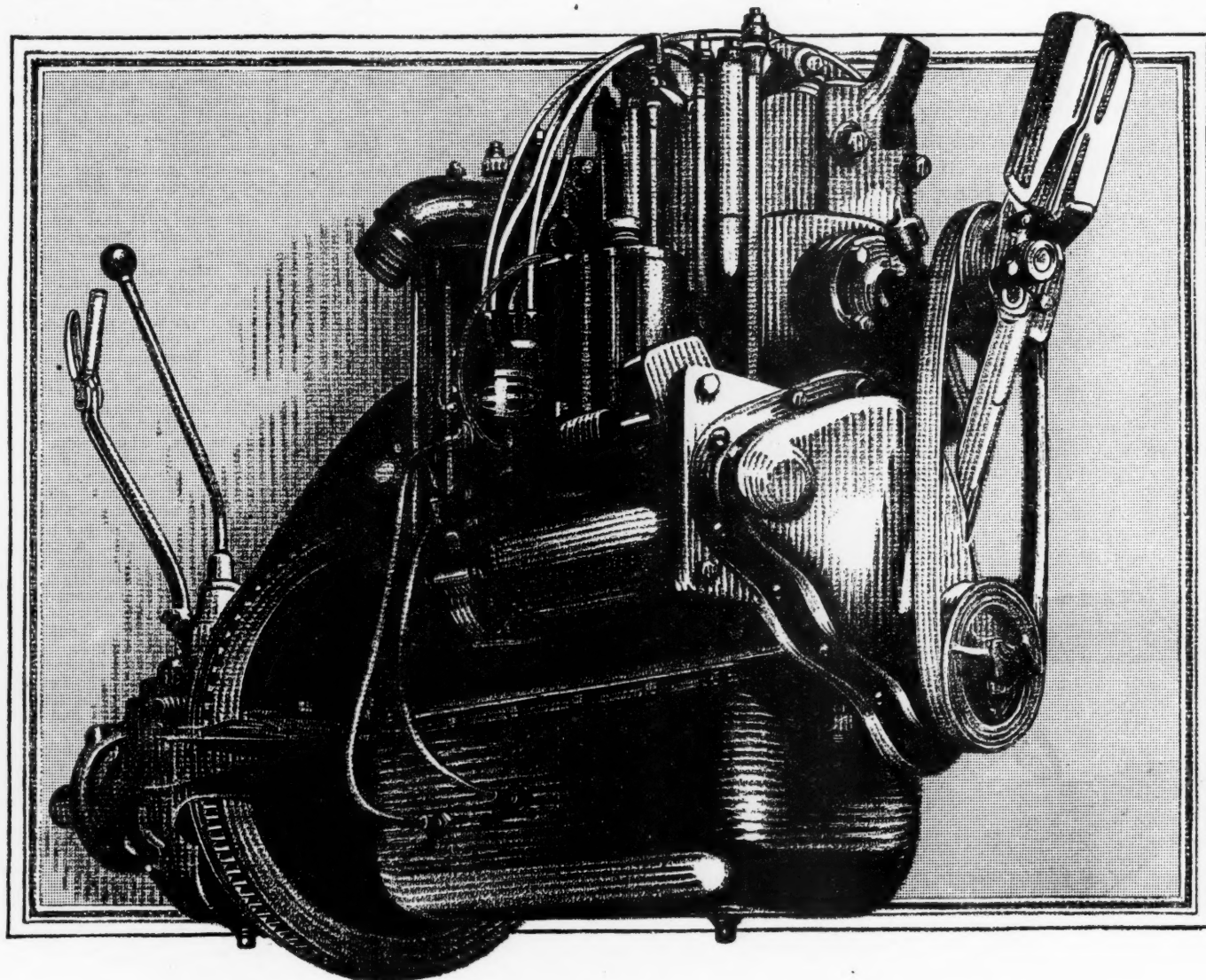
less pruning the large roots receive, the better for the tree. The importance of severe root pruning before planting has many times been over-emphasized. The main object should be to put the root system in good condition with the slightest amount of pruning. In many cases, the cuts made when the trees were dug are already calloused. If this is so, it is not necessary to make fresh cuts which will require new callousing. Bruised, lacerated and broken roots and rootlets should be cut away to a smooth surface with a sharp knife or pruning shears. Trees that have been grown in deep soils frequently have long tap roots. These may be shortened to six to eight inches for convenience in planting without

(Continued on page 15.)



Peach tree showing distribution of limbs after pruning, as viewed from above

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WALKERVILLE, ONTARIO



Ventilation Important in Common Storage

"THE HEIGHT to which boxes of apples are piled in common storage has much influence on the keeping quality of the fruit," according to C. R. Hauser of the Horticultural Union, Yakima, Wash., who supervised the handling of 2500 cars of apples the past season.

"The friction of air in ventilation is greater than is generally supposed. If the boxes are piled too close to the ceiling there is not room enough to effect a change in the air. The result is that the apples sweat and deteriorate.

"There should be at least 18 inches of space between the highest box and

the ceiling. Handled in this way the apples keep better because they can be ventilated more thoroughly. There is naturally a desire on the part of every grower to utilize warehouse space to the fullest extent, but the results indicate that apples can be piled too close to the ceiling for the best keeping of the fruit."

According to Mr. Hauser, some varieties of apples are kept better in the fall out in the orchard. "If stacked up under the trees and covered with paper so as to keep the sun off them, they keep better than if put in common storage warehouses. Actual tests have proved this statement. It is practicable to keep apples outside in this way as long as it may be done without danger of frost injury."

H. V. Taylor, Deputy Controller of Horticulture to the Ministry of Agriculture of England, is now in Canada investigating packing house methods for handling apples for export. In November he plans to visit some of the more important fruit sections of the United States. Mr. Taylor has been largely responsible for the Great Imperial Fruit Show held annually in England.

The Canadian Department of Agriculture has recently made a ruling under the Animal Contagious Diseases Act that on and after October 1 the importation of nursery stock packed in hay, straw or other fodders will be prohibited from countries other than the United States.

Unprofitable Apple Trees

by M. B. Cummings
University of Vermont

MANY trees do not bear heavily or regularly and an orchard may therefore become unprofitable. It is the trees that fail to crop that often lessen the returns, perhaps more than any other one thing.

It is natural for a tree to bear, but native trees do not bear every year. If a tree under culture does not bear, it is because of some hindering circumstances, such as food supply, pests, improper treatment, and more often imperfect pollination of blossoms.

It is customary in dairying to attribute losses to the unprofitable cow—the cow boarder; and in potato culture to assign low yields per acre to the poor, or even to missing hills. It is the poor ones that pull down the yields and make imperative a division of profits. The "off year" and the "no crop" trees eat into the profits and the averages become low.

Since we all have these poor trees, the problem is a general one. Therefore, the question, "What can be done?" How approach the problem? First of all let us get the facts. Let us locate these boarder trees and record their performance. It is a good time to do it when the crop is on, if there is one. The credits and debits can then be registered to the best advantage. Some system of orchard records is the second step. If the rows in an orchard are numbered and the trees in the row are lettered, the reference is simple. A day spent in registering yields is time well spent.

The third step consists in ascertaining, if possible, the cause of failure to produce. Proceed as follows: Is the tree healthy? Look for dead limbs, cankered trunks, borers, injury, etc. Are any of these responsible for poor results? Perhaps they will give a clue. Is the foliage good? Are the leaves large and numerous, and of dark green color? If not, add manures or nitrogen next year in some form. A healthy, vigorous tree is the first essential for good yields. Good board precedes good performance.

It is often well for the orchardist to turn doctor, or become a druggist, and make a prescription to meet the needs of his trees. If the spray program, if there was one, was not faulty in controlling pests and protecting the trees, we shall not rest content, for we have not exhausted the possible causes of unfruitfulness.

In recent years a serious defect has come to light. I refer to the imperfect pollination of blossoms. Most varieties of fruit benefit from, even if they do not require, cross pollination of the blossoms. An insufficiency of bees at blossoming time has become a serious matter. The loss in bee population, both among the wild and the domestic creatures, has become alarming, and if the decrease continues, an appalling situation will have arisen. If the trees blossom well and good weather prevails, one's first thought should be about the bees. For several years I have known of poor sets of fruit where the grower reported that hardly a bee could be found when the trees were in bloom. No wild bees were observed and few could be seen.

A most interesting circumstance came to my notice recently when an orchardist in Grand Isle county, Vt., placed hives of bees in isolated areas in his orchard. As it happened that year, blossoming time was accompanied by much rain and bees only visited the nearby trees, which in turn were found to be the only ones that bore well that year in that orchard. Just those trees near the bees were visited.

One Vermont orchardist this year drove his auto truck 30 miles to secure bees from an apiary for use in his orchard, with the result that he has a good crop.

Says Peter Jones, after the rain had washed off the spray whose application he had just finished: "What is to be will be, and what ain't to be is pretty liable to happen."

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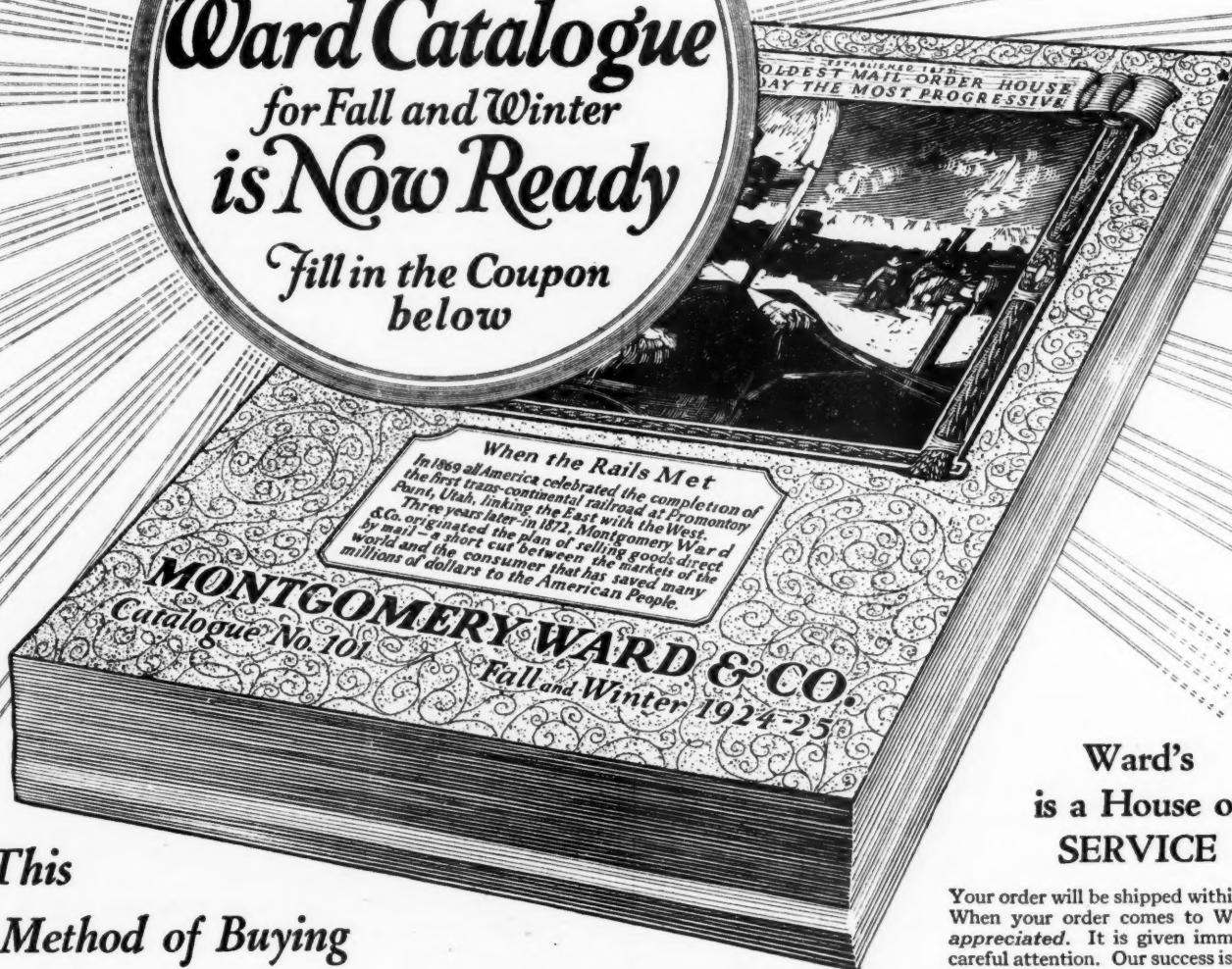
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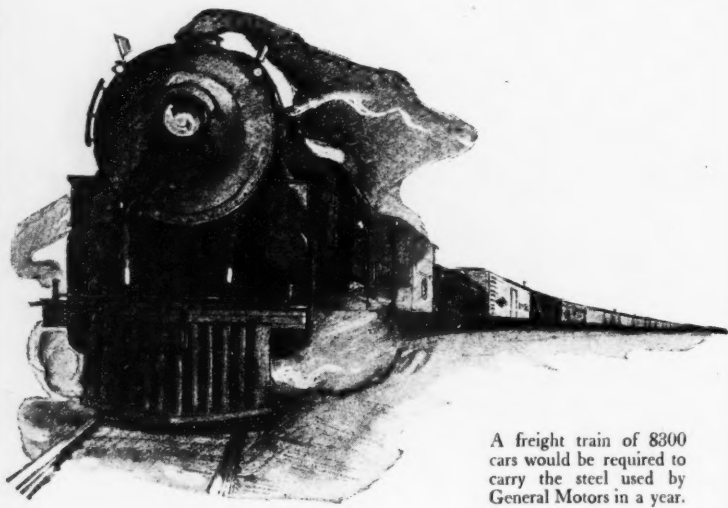
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Massachusetts Growers Discuss Important Subjects

by J. K. Shaw

Massachusetts Agricultural College

THE ANNUAL farm and home week of the Massachusetts Agricultural College, held a short time ago in co-operation with the Massachusetts Fruit Growers' Ass'n, was attended by over 2000 persons.

The program consisted of demonstrations of modern machinery for cultivating orchards, of inspections of the orchard experiments being conducted by the college, and of addresses by leading authorities.

At one of the sessions, Prof. J. H. Gourley, of Ohio, discussed soil management and fertilization, giving a well-balanced discussion of this important subject and citing much evidence from the experiments in many states. He called attention to the differences of opinion regarding the problem of sod mulch versus cultivation and said that this indicated that either method might be used with success under certain conditions. He cited experiments showing that the cost of growing orchard trees to the age of nine years was considerably more under tillage than in sod mulched orchards, while the yields were decidedly larger under the sod mulch system. He stated, however, that as trees became older it was probable that the cost of mulching would show a relative increase. He called attention to the importance of using nitrogen liberally in sod mulch orchards. He also cited evidence to show that nitrates were more abundant under cultivation than under sod. He stated that until more evidence is at hand we will dismiss the toxic theory as being of less importance in causing the yellowing effect so common on grass-grown fruit trees in the lack of sufficient moisture and soil nitrates. He commended the system of mulching trees with material brought in from the outside as a successful method of orchard culture under many conditions.

Visits were then made to the experimental plots of the Department of Pomology under the leadership of members of the Department. Here an actual demonstration of comparative results of different systems of tillage and fertilization were seen by the visitors. Many of these experiments served to confirm what Prof. Gourley had discussed in his address. Heavy mulching has proved superior to cultivation, and plots in sod, with 300 pounds of nitrate of soda per year, are looking decidedly better than comparative plots in cultivation without fertilizer. Pears in sod seemed to respond to fertilizers in much the same way as apple trees, but the response does not appear quite so promptly. The farmers were much interested in the new varieties originated by the New York Experiment Station, and especially in the Cortland apple, which is being planted in a limited way over the state.

Their annual dinner was presided over by President S. Lothrop Davenport, of the Massachusetts Fruit Growers' Ass'n. Prof. W. R. Cole, of the Massachusetts Agricultural College, and A. W. Lombard, of the State Department of Agriculture, discussed advertising and competitive fruit exhibits.

Demonstrations were made of power sprayers and dusters. Some of the leading makes of sprayers were seen in operation with various types of equipment, and the duster was given a place following the spraying equipment. Prof. A. I. Bourne, of the Department of Entomology of the College, and Prof. A. Vincent Osmun, head of the Department of Botany, gave brief discussions of various insect and disease pests. This was followed by an explanation and demonstration of the best methods of spraying by Prof. F. E. Cole, extension specialist in pomology. He emphasized

the necessity of proper mixing and thorough application of spray material in liberal amounts; also the value of high pressure and adequate reserve power in the spraying outfit.

Prof. W. W. Chenoweth, head of the Department of Horticultural Manufactures, conducted a demonstration of the utilization of cull fruit from the orchard, and everybody visiting the horticultural manufactures plant was given opportunity to test newly made cider and gathered a good deal of information as to the proper way of producing this and other by-products of the orchard.

In another session Prof. Gourley again addressed the fruit growers on the subject of "The Pollination Question in the Modern Orchard," and also gave a brief discussion of the usefulness and effect of ringing apple trees. He brought out the fact that most apple varieties can, for practical purposes, be considered to be self-sterile and emphasized the value of having more than one variety in the orchard. Not only are most varieties practically self-sterile, but certain varieties, especially those of the Winesap group, are poor pollen producers and practically worthless for pollination purposes. He further emphasized that neither fertility nor sterility are constant characters, but are greatly affected by environmental conditions. He gave considerable attention to the question of cross-sterility. He cited results in Ohio to show that Stayman Winesap pollinated by Wealthy and by Baldwin gave practically no set of fruit. Grimes and McIntosh, on the other hand, proved to be excellent pollinators for Stayman. He named the following varieties as excellent pollinators for the Baldwin: Ben Davis, Golden Russet, Northern Spy, McIntosh and White Pippin. As pollinators for McIntosh, Ben Davis, Northern Spy, Delicious, York, King, Grimes, Yellow Transparent and Red Astrachan have given excellent results. Stayman gave good results when pollinated by Grimes, Jonathan, York, Rome Beauty, Delicious, Yellow Transparent and McIntosh; and Jonathan when pollinated by Delicious, Grimes, McIntosh, Ben Davis, Duchess of Oldenburg, Wagener, Wealthy, Yellow Transparent and Rome. He named Grimes, Jonathan, McIntosh, Ben Davis, Yellow Transparent and Golden Delicious as being in general excellent pollinators, while Stayman, Baldwin, Winesap and Rhode Island Greening had proved undesirable for this purpose.

Following Prof. Gourley's address, J. H. Putnam, county agent in Franklin county, discussed the question of "Holding Our Markets Against Outside Competition." He called attention to the excellent local market which the New England fruit grower has, and the fact that to a very large degree this market is supplied with apples brought in from a considerable distance. He discussed the question of the best package for the New England grower and emphasized the need of better grading and packing.

Carlisle Leaves Georgia Exchange

J. G. CARLISLE, manager of the Georgia Peach Growers' Exchange since its organization last October, has resigned to accept a position with the Missouri Pacific railway. Before entering the exchange work, Mr. Carlisle held a position with the Central of Georgia Railroad Co.

The work of Mr. Carlisle with the Georgia Peach Growers' Exchange has been entirely satisfactory, according to reports, and there is much regret among the officers and members because of his leaving the work.

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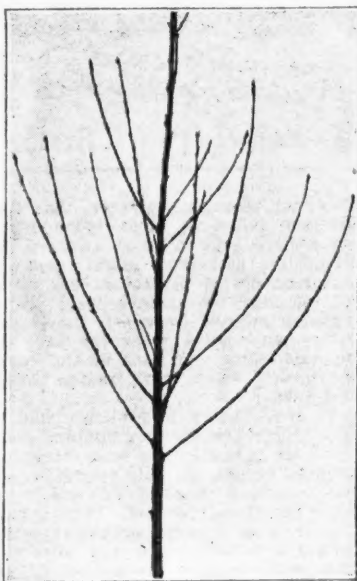
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Successful Tree Planting

(Continued from page 10.)

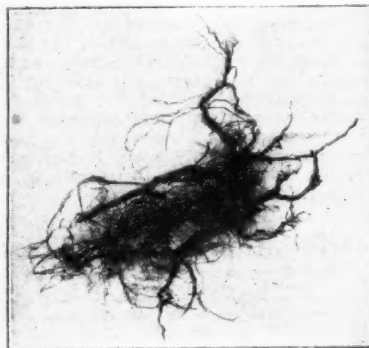
injury to the trees. The main lateral roots can be shortened to around six inches in length. The cut surface should always show fresh, living wood. When this cut surface comes



One-year-old nursery tree

in contact with moist soil the cambium grows out over the end and forms a callous from which the new roots start very readily.

Many observations show that for the most part new growth starts from the sides of the larger roots where they come in intimate contact with the soil. Small fibrous roots die when the tree is removed from the nursery and not only do not grow but prevent soil from getting into close contact with the larger, more essential roots.



One-year-old peach tree showing roots before pruning

They often curl around the larger roots of the tree, and then if not dried out or dead, are bent to such an extent that they do not function properly. In most cases, fibrous roots are developed from the larger essential roots of the tree. These fibrous roots in turn develop delicate organs, known as root hairs, which maintain their life under conditions of moisture. These root hairs, as their name implies, are fine and hair-like—so fine, indeed, that one needs a microscope



One-year-old peach tree showing roots after pruning, and ready to set out

to see them perfectly. They have an exceptionally thin and delicate cell wall and contain the active protoplasm on which the life of the tree depends. It is by the osmotic action of the delicate walls of the root hairs that the tree is able to get its food from the soil.

It can be readily imagined that the more delicate fibrous roots and root hairs are easily injured and killed by drying. Unless they are constantly in contact with moist soil particles, they die, and the leaves of the tree quickly indicate suffering for moisture. When root hairs are exposed to the air, they at once begin to lose moisture, and as the moisture dries away, these root hairs die. It is upon these delicate little organs that the life of the trees depends and the growth and vigor of trees is proportionate to the number and activity of root hairs.

With this understanding, it is easily apparent why so much attention must be given to properly planting the tree, and it is also easy to understand why the top must be pruned in transplanting to partially restore the balance between the top and the root system, which is destroyed when the trees are removed from the nursery.

Details of Setting

The actual operation of planting is one that requires careful attention. It is important for the reason that the later growth of the orchard will depend to a large measure upon the start which the trees make after planting. The main consideration is to see that every part of the root system is in close contact with the soil. Trees should be set at the same depth or only slightly deeper than they stood in the nursery row. In regions where winter injury is prevalent, growers sometimes plant their trees leaning slightly in the direction of the prevailing wind, so that the shade will protect the trunks from the sun. As an additional protection against winter injury and wind, the heavy side of trees may be planted toward the two o'clock sun. Every tree has a heavy and light side due to the fact that the annual layer is thicker on one side of the tree than on the other, so that the pith of the tree is not at the exact center but more to one side. The heavy side may be determined by grasping it near the middle so that it balances across the hand. As it comes to rest, the heavy side will take position downward, or next to the hand.

In setting out trees, one person should hold the tree in an upright position while another shovels or fills in loose soil around it. One man spreads out the roots and rootlets in as natural a position as possible. Surface soil should be put in first around the roots, care being taken to fill every space, thus bringing roots in direct contact with the soil. When the hole is two-thirds full, firm the earth thoroughly about the roots by tramping with the feet, but before doing this draw the tree to its correct position. The top several inches of soil should not be trampled. If the soil is in proper condition and contains sufficient moisture, no water need be used in planting, but if the soil is dried out, when the hole is three-fourths full of dirt, water may then be added, and the hole filled in with loose soil, forming a mulch about the base of the tree.

In distributing the trees in the orchard and planting them, exercise every care to protect the roots from exposure, keeping them covered with damp sacks. Many orchardists use a barrel or trough on a wagon or sled in which they keep the roots of the trees in water, taking the trees out as they are needed. Some growers puddle the trees after pruning the roots and before they are distributed throughout the orchard. This consists of dipping the trees in a thin mud, usually made out of clay. Such treatment will keep the roots in a damp condition for a considerable time.

No manure or vegetable matter of any kind should be placed in the bot-

(Concluded on page 32.)



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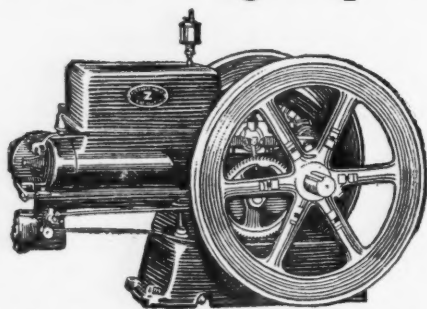
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Orchard Problems and Their Solution



Edited by Paul C. Stark

Turning Under the Annual Cover Crop

I have been using a cover crop in my orchard year after year and usually plow it under in the spring. Is there any objection to doing this in the fall, instead of waiting until spring?—A. R. K., Ohio.

IN USUAL practice, the majority of orchardists plow under their cover crop in the spring rather than in the fall, but this does not necessarily mean that is the best or only time. Spring does have some advantages, however, in that the cover crop may serve to catch and hold the snow during the winter, thereby protecting the tree roots. It also prevents washing of the soil during the heavy fall and spring rains.

Fall plowing on the other hand has certain other advantages with respect to the turning under of a cover crop. In the first place, the grower usually has more time in the fall. Furthermore, if the cover crop is turned under at this time, it starts to decay at once and plant food is made into available form by the time the trees need it. The advantages of an early stimulation of this nature are seen in an increased set of fruit, just as in the case of nitrate of soda applications.

Fall plowing, if practiced, however, must be done late enough in the season to avoid stimulation of tree growth, and yet early enough to give opportunity for the hardening of any partially exposed tree roots before cold weather sets in. In the case of some locations where winter washing is apt to occur, or where the soil would not dry out quickly enough to permit the spray wagons to be driven through the orchard at the proper time, the cover crop should be left until spring.

The fact remains, however, that the primary infection must come from somewhere and in most cases it is from the abundant blight cankers found on old or neglected pear trees located near the apple orchard. The common method by which the blight germs are spread is by the bees at blooming time and later by the sucking insects which work on the young and tender shoots.

In some years it probably makes little difference whether blighted pear trees are present in or near the apple orchard or not, but this year it would have been a distinct advantage to have had them removed. In your particular case, it would probably be the best and safest plan to cut down the few pears to save the apples, unless they are valuable trees, and in that case all blight should be kept cut out, allowing no over-wintering cankers to remain which might make trouble next year.

Fall Planting

Would fall planting of fruit trees be a good practice in southern Indiana? I have been doing most of my planting in the spring, but if it could be done just as well in the fall, I would like to do it then.—J. R. W., Indiana.

I SEE no reason why fall planting should not be satisfactory in your section. Fall planting is rather commonly practiced in southern sections and is preferred by many growers to spring planting. Practically all fruits can be planted successfully in the fall in southern and central sections as a rule. For the cherry, fall planting is particularly desirable. For northern states spring planting is generally believed to be best. Where fall planting can be successfully used, it lightens spring work and usually results in a better growth the first year.

Preventing Apple Scald by Oil Wraps

I have heard a great deal about the oil paper wraps they are using out in the Northwest to prevent apple scald. Is this being used to any extent in the East? Do they wrap apples in this way which go into barrels?—R. J. E., West Virginia.

THE PREVENTION of scald by wrapping with oiled paper is now quite common in all parts of the country. Of course, the practice is more common when apples are packed in boxes, but during the last two years this same material has been used with barrelled apples. Instead of actually wrapping the fruit as in boxing, shredded oil paper is used, being placed at both ends of the barrel, scattered through the barrel, and often around the sides as the fruit is being packed. The results obtained from the use of oiled paper in preventing scald on susceptible varieties of apples have been very satisfactory—especially when each apple is wrapped and packed in boxes.

Fire Blight in the Apple

The blight has been very bad among my apple trees this year. I have noticed, however, that the part of my orchard next to some old blighted pear trees is the worst infected. Should these pear trees be cut out or doesn't this make any difference? What accounts for the blight being so bad this year?—T. M. S., Oklahoma.

FIRE blight has been particularly severe among both pear and apple trees this season owing to the cold and backward spring. In fact, the conditions in late summer were ideal for a heavy infection of this disease.

Defoliation of Cherry Trees

Most of my sour cherry trees have lost their leaves, particularly in the tops, the trouble starting soon after the fruit was picked. Can you tell me the cause of this?—A. S. B., Missouri.

THE DIFFICULTY you describe is probably due to leaf spot or shot-hole fungus. In cool, wet seasons like the present one unsprayed trees often become completely defoliated from the effects of this disease.

Leaf spot usually appears about the time the fruit begins to ripen. It is advisable to spray with Bordeaux Mixture soon after the cherries are well set in the spring and again just after the crop is picked. If no Bordeaux is applied, the trees in many sections are quite likely to suffer from the leaf spot. The leaves usually become yellow at first, accompanied by more or less spotting. The defoliation which later occurs usually does not kill the tree but it appreciably weakens it and reduces the crop for the following season.

Too Close

A negro went into a bank down south to get a check cashed. He stood in line a long time and finally his turn came. Just as he got to the window the teller put up a sign, "The Bank Is Busted."

The Negro: "What do you mean, the bank is busted?"

Teller: "Well, it is, that's all; it's busted—didn't you ever hear of a bank being busted?"

The Negro: "Yes; but I never had one bust right in my face before."

Fundamentals of Fruit Production

ONE OF the best books on fruit growing which has come to our attention for some time is "The Fundamentals of Fruit Production," written by Gardner, Bradford and Hooker. The book appears to cover all of the important phases of fruit production. It is not a book which will appeal to the beginner who desires a brief and pointed recital of the principles of practical fruit growing. The authors themselves make no claims as to its fitness for elementary purposes. Rather, the book attempts to analyze and describe the fundamentals underlying fruit production. In other words, it undertakes to explain the reasons for the things which happen and it aims to equip the reader with a knowledge of principles so that he can determine the solution of his own problems. It is a book for the careful reader who desires a more intimate knowledge of the fundamentals of fruit production, a knowledge which is needed for the most successful fruit growing under the present problems of the industry.

The book is printed by the McGraw-Hill Book Co., of New York, and sells for \$4.50.

Good Book for Addresses

THE SIXTH edition of the Directory of Agricultural and Home Economics Leaders in the United States and Canada has just been issued. It contains 672 pages and lists all the county agents, farm bureau growers, workers in the United States Department of Agriculture and state agricultural experiment stations, state and national farmers' associations and co-operative marketing associations.

It is a useful book for agricultural organizations and others who occasionally desire such addresses.

The directory is published by William Grant Wilson, 51 Chestnut St., Cambridge, Mass., and sells for \$10, including supplements which keep the list up-to-date.

"Imitation" Soft Drinks to Be Labelled as Such

BOTTTLERS of carbonated soft drinks are eagerly striving to have the word "imitation" omitted from the labels. The ugly word "imitation" hurts the bottlers' business, according to Hugh McMackin, secretary of the Eastern Soda Water Bottlers' Ass'n. He asks that the words "artificially colored and flavored" be substituted.

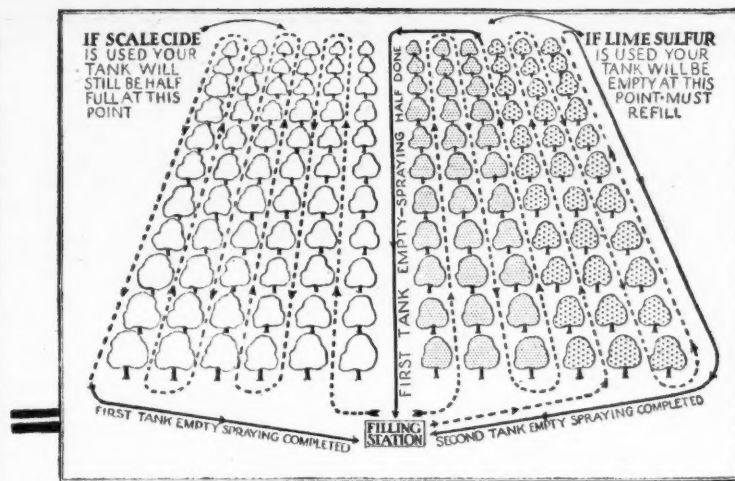
His statements regarding labelling created a furore at the annual meeting of the food inspection division and tonic manufacturers recently held in Boston.

Dr. P. H. Mallowney of the opposing faction stated:

"I hope the time will never come when the federal authorities will change the designation of labels in that respect. Such drinks are an imitation and nothing else, and should be labelled as such. Moreover, such labelling is commercially unsound. The public have a right to know what they are getting, and the word 'imitation' alone covers the situation."—*Sunkist Courier*.

Prohibition Nations Win Olympic Games

IT MAY be a coincidence, but it is a singular fact that both first and second places in the Olympic games were won by countries which have prohibition in effect. The United States won the games with a total of 255 points. Little Finland won second with a total of 166 points; Great Britain was third, with 85½ points; Sweden fourth, with 31½ points; and France fifth, with 26½ points. A considerable number of writers, both in Europe and America, are attributing the victories of the United States and Finland to the fact



Cheaper than Lime-Sulfur

\$11.50 buys enough Scalecide (delivered East of the Mississippi River) to spray as many trees, until they drip, as one 50-gallon barrel of lime-sulfur. If you were spraying two equal blocks of trees—one with Scalecide and one with lime-sulfur—you would have to spray out only one tankful of Scalecide for every two of lime-sulfur—at one-half the cost. And Scalecide is so pleasant to use!

Scalecide is not an oil emulsion but a miscible oil that mixes instantly with cold water and stays mixed without agitation. Its continuous use for the past twenty years throughout the

fruit-growing world has proven that it will not do injury such as has been so often attributed to oil emulsions and improperly made miscible oils.

On every tree, shrub and vine that sheds its leaves in winter—use Scalecide as your dormant spray. Then you will know that you have done all that can be done at that particular time by any dormant spray or combination of sprays. If your dealer doesn't carry Scalecide, show him this advertisement—or order direct from us. Send \$11.50 plus \$2. for each 15-gallon drum. The \$2. will be refunded upon return of drum.

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that both of these countries have adopted prohibition.

Grower's Condition Improves

THE FINANCIAL condition of fruit growers and farmers is better than it has been for 47 months, according to a report recently issued by the United States Department of Agriculture. As a result of recent rises in prices and the fall in prices of many non-agricultural products, the combined exchange value of 16 leading farm products on August 1 had an index rating of 83, taking the 1913 base as 100. This is said to be the highest point reached in 47 months.

AT THE recent summer meeting of the Illinois State Nurserymen's Ass'n, Dean C. M. Thompson of the College of Commerce of the University of Illinois, gave an address in which he outlined a method by which the University might assist the nurserymen in developing an improved accounting system. At the close of his address, the nurserymen discussed the matter and then unanimously voted to co-operate with the University to the end that a uniform accounting system might be developed.

This step is part of the program of the University of Illinois to devote

more attention to agricultural economics. Twenty-five courses are now being given in agricultural economics. Research work is being conducted along many lines, including credit rating, taxation, tenantry and methods of production and marketing.

A readjustment of the working staff will be made this year. Prof. Ivan Wright will assume directorship of the banking courses. Dr. C. L. Stewart, who was born, raised and educated in Illinois, and who has conducted research work for the United States Department of Agriculture for several years, will become director of instruction and research in agricultural economics.

THE EDITOR recently had the pleasure of judging the fruits and vegetables at the Adams county (Ill.) fair. This fair is patronized by eastern Illinois, eastern Iowa and western Illinois and is somewhat larger than the average county fair.

The fruit and vegetable exhibit was exceptionally fine; in fact, it was one of the best the writer has ever judged. No doubt the excellent crops of fruits and vegetables in that section this year contributed to the success of the exhibit. There were large numbers of entries in most classes, and the exhibition hall was well filled with material.

It was quite evident that a great

Fall spraying with Scalecide controls psylla and peach leaf curl. Spring application controls aphids, pear thrips, leaf miner, case bearer and leaf roller. Either fall or spring spraying with Scalecide controls scale, bud moth, European red mite, fungus or blight cankers from which are spread fire blight, collar rot and root rot. And in addition, year after year use of Scalecide invigorates the trees.

Carboleine

A miscible oil—has been in use longer than any oil spray on the market, except Scalecide, and kills scale as well as Scalecide even at a weaker dilution—and known to be safe. While it will not do all that Scalecide will do, neither will any other dormant spray. Price: \$20 per 50-gallon barrel including container, f.o.b. Hackensack, N. J.

Oil Emulsions

While oil emulsions have not yet proven their value and safety, and we do not recommend them, we will supply them to you of a quality and stability not obtainable elsewhere. If you insist on using oil emulsions, let us quote you prices.

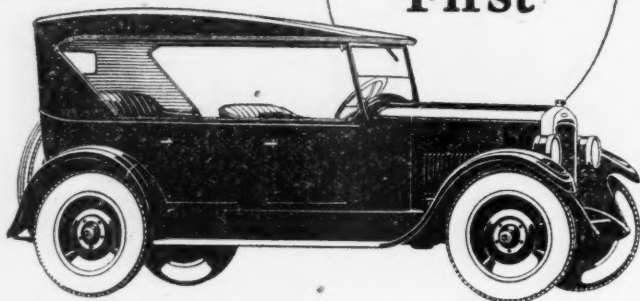
many of the exhibitors know how to prepare fruit for exhibition, a matter which seems to be sadly lacking in many county fairs. Competition was particularly keen in the Jonathan, Grimes Golden, Stayman Winesap, Wealthy, Maiden Blush and a few other varieties of apples. In one exhibit of late potatoes, 12 baskets had to be laid out on the floor, after a number of other baskets had been eliminated, before the best three exhibits could be determined.

THE MICHIGAN Fruit Growers, Inc., recently conducted a modest campaign with the object of interesting tourists in the eating of more raspberries. Attractive placards of raspberries in colors were displayed in a leading restaurant. The result was an increase in raspberry consumption of from 25 to 50 per cent.

The increased sales in this one restaurant did not, of course, raise the prices on the local market, but the experience leads exchange leaders to believe that an excellent opportunity awaits Michigan growers for increasing the consumption in larger markets of the state, especially after the growers are more thoroughly organized.

It is planned to emphasize the matter at the forthcoming convention of the Michigan State Horticultural Society.

See Oakland First



BEFORE you settle on your next motor car, take a look at the True Blue Oakland.

Substantial improvements in design and performance make Oakland a wonderful selection for the hard grind of farm life.

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AT A MEETING at Cleveland, Ohio, August 11 and 12, a statement covering the purpose and scope of the proposed International Institute of Co-operation was formulated and adopted. This statement sets forth that the institute "is designed to promote research and general education in the broad principles and ideals upon which the co-operative movement rests."

It is planned that the institute afford a clearing house for discussion among persons interested in co-operation. It is expected that the institute will be a "training school for leaders and managers in co-operative enterprises, teachers in colleges and research and extension workers." At the first session, which will be held in the summer of 1925, attention will be given to "the organization and management of agricultural co-operatives and the technique of co-operative marketing of farm products." Each week of the institute, special consideration will be given to the marketing problems of specific commodities or special lines of co-operative business.

The plan and scope of the institute is to be placed before the co-operative associations of the United States, that as many as desire may attend a meeting to be held in Chicago early in December for the purpose of completing the organization and incorporating the institute.

THE ILLINOIS Fruit Growers' Exchange held a meeting on September 10 of representatives of its 23 local units to consider the question of reorganizing the exchange under the new co-operative act passed at the last session of the legislature. Preliminary plans call for the adoption of a five-year contract.

During the present season the exchange has been the largest user of the shipping point inspection service offered by the Illinois Department of Agriculture. Practically every carload of fruit and vegetables shipped by the exchange has been inspected and given a certificate of inspection, which lessens the chances of rejection by buyers and serves as a basis upon which claims may be made.

AT A RECENT meeting of the California Walnut Growers' Ass'n the officers then serving were re-elected for another year. They are: C. C. Teague, president; Ralph McNees, vice-president; Carlyle Thorpe, general manager; W. T. Webber, secretary-treasurer; Claude B. Payne, assistant secretary, and George E. Farand, general counsel.

The annual report disclosed that \$9,000,000 worth of walnuts was marketed last year at substantially 1922 prices, 39,753,800 pounds of unshelled were packed and sold, and the opening price value of the crop was \$8,961,906.



by C. E. Bassett

NINE local associations engaged in packing and selling prunes have united and established the Northern Pacific Co-operative Prune Exchange, Portland, Ore., a federation to furnish sales service in connection with the marketing of Oregon prunes. This federation, so far as prunes are concerned, replaces the Oregon Growers' Co-operative Ass'n, Salem, Ore., which was formed in 1919 to handle a variety of agricultural products, including apples, pears, berries, prunes, etc., and which functioned for several years, but was not entirely successful as a marketing agency. The assets of the Oregon Growers' Co-operative Ass'n were liquidated in the early part of this year, the present federation acquiring the brands, trade-marks, etc.

The new exchange is organized without capital stock as a co-operative association for the purpose of serving its members only. In the language of its by-laws, the exchange, "is instituted to furnish the facilities and agencies through which the prunes of its members and growers represented by them may be marketed and distributed upon a uniform plan and in such a manner as to bring about a high standard of quality, a more uniform distribution, and a larger consumption thereof in the markets of the world."

The exchange is built upon local associations whose members are bound to them by a standard marketing contract. A formal contract is executed between the exchange and each local. Prune pools are to be exchange-wide. All returns to local associations are to be based on the net proceeds from the different pools, after the deduction of expenses of operating and fixed charges. Local associations agree to pay the exchange two cents a pound for all dried prunes covered by the contracts in case of breach of contract.

In addition to making deductions to cover the expenses of operating, the exchange is given authority to deduct and retain one-twenty-fifth of a cent a pound on all prunes, the same to constitute a special fund for capital and reserve. Certificates of indebtedness are to be issued to the local associations at the end of each year to cover deductions for the reserve fund. It is proposed to redeem the certificates after the reserve fund attains such proportions as may be necessary, certificates being redeemed in the order of their issue. The process of deducting and repaying are to continue during the life of the exchange, "it being the intent that said fund shall permanently revolve to the end that all contributions made in one year shall be returned to the contributors in the succeeding fourth year."

The plan of organization provides that the exchange shall be made up of individuals representing local associations which have affiliated with the exchange. Only locals with five or more members and controlling not less than 250 acres of bearing prunes are eligible for membership. The exchange will recognize as a member the individual selected by the local and will recognize a change in membership as often as a local makes changes in the individual who is to represent it.

There are, therefore, as many members of the exchange as affiliated associations. The membership fee has been placed at \$100. Annually the members of the exchange are to meet and elect themselves directors of the

exchange, and as directors are to meet and organize as a board of directors and assume the active management of the organization. Thus the number of members constituting the exchange and the number of directors making up the board of directors is the same as the number of affiliated associations. The voting power and the property rights and interests of all members are equal.

Only the president and the vice-president of the officers need to be members of the exchange. The other officers may be selected from outside of the membership. Directors are to serve without compensation, but are to be reimbursed for their traveling expenses in attending meetings of the board of directors.

Each affiliated association is required to give a note which can be used as collateral in obtaining working capital. Preceding the beginning of each business year the board of directors is to prepare a budget for the guidance of the officers and employees.

The exchange is to have absolute power in the matter of deciding problems connected with grading, packing and marketing. It is to control all trade-marks and labels, the trade-marks previously used by several of the local associations having been turned over to the exchange, it is reported.

Affiliated associations wishing to withdraw from the federation can do so between the first and fifteenth of March of any year.

WHILE some of our more modern farm leaders are at times rather impatient with what they feel is a too slow growth of the co-operative movement in this country, the real pioneers in agricultural team work can look back upon this growth with considerable satisfaction. Men who started this work, about the time the present generation of workers were born, had pretty hard sledding trying to secure the attention of those who are now sitting on the front seats and yelling the loudest. But it has been a campaign of education through which we have been passing, and there will always need to be educators to lead us on to higher and better things. The problem of co-operation is to unite the gains secured from expert ability and knowledge with the gains secured from having large numbers and large tonnage united in a business. Each member must be made to feel that it is his duty to contribute his share of experience, tonnage, finance and active support in order that there shall be gains for all and so for himself. While it is a common idea among some "co-operators" that a membership carries with it the right to find fault, the real truth is that membership only carries with it the right to—work!

The writer was recently called in to doctor up a sick fruit and vegetable association and found a very modern warehouse, with all the latest equipment for receiving, grading, packing and loading. The name of the association was painted across the side of the brick warehouse and the word "Co-operative" covered about one-quarter of the building. Previous to the meeting with the members, each one took turns in button-holing me, while I was let into the secrets of the local failure, and each member "passed the buck" to some other member or set of members. It did not take long to discover that all the co-

operation that association possessed was contained in the one word on the outside of the warehouse. Instead of being a group of co-operators (those who work together) they were a bunch of selfish kickers, jealous and suspicious of each other but perfectly willing to ride, if the others would do the pushing. They had a first-class manager, but he could not do it all. His efforts to establish a dependable grade were looked upon as an effort to put more burdens upon the members. It took some pretty caustic treatment to bring that bunch to their senses, but they have found that co-operative talk has to be backed up with co-operative practice to be effective.

ONE OF the greatest dangers which co-operative associations must avoid is the frequent temptation to hold commodities for speculation, and to attempt to unduly increase the price by artificially withholding the products from the market when actually needed, instead of disposing of them in an orderly way, as the demand for them justifies.

In times of fair weather, prepare for the storm. Co-operative associations should retain out of each year's operations a certain percentage, to be set aside as a surplus or reserve fund, to be used in time of need. You will soon be able to finance your own activities. A grower member, who has \$20,000 invested in his farm for productive purposes, ought not to object to the retention of a few hundred dollars to safeguard his marketing machinery and so make good his entire investment.

The first and most important activity for a co-operative marketing association is the establishing and enforcing of a grade and standard for the product of its members. The federal government and most of the states have laid down grades and standards for the most important farm products, and these should be followed. In some sections it even has been found advisable to raise these government standards. Study your natural markets and try to supply what those markets want. Do not try to force white turnips onto a market that will pay only a premium for yellow rutabagas. But your standard of grade and pack will have much to do with your success.

THE JERSEY Fruit Growers' Co-operative Ass'n, Camden, N. J., evidently realize that "well grown is half sold" and so have pressed their members to thin their fruit and allow only fruit of a marketable quality to reach maturity. With all dwarfed and diseased fruit removed, and the rest thinned to a distance of from six to eight inches, their marketing problem is greatly simplified. The association field manager was aided by the state extension service and others in getting this work done.

DIRECT loans to agricultural co-operative associations by the 12 Federal Intermediate Credit Banks amounted to \$34,697,345 during the calendar year of 1923. The exact amounts of the loans to the associations handling the various commodities were:

Cotton	\$16,282,506
Tobacco	8,216,444
Raisins and prunes	5,400,000
Wheat	2,699,552
Canned fruit	1,379,902
Rice	342,939
Wool	193,902
Broomcorn	100,000
Peanuts	56,300
Red Top seed	25,800

Total \$34,697,345

Part of the loans were repaid before the close of the year.

TWO COURSES in agriculture' co-operation and one in collective bargaining are offered by the New York State College of Agriculture of Cornell University, Ithaca, N. Y., for the coming school year. One course will deal with agricultural co-operation in the United States and other countries, and one with the principles of co-operative organization, corporation laws, financing of associations, relations to membership and business policies. The course in collective bar-

gaining will consider collective bargaining and its use by labor, capital and agriculture and the policy of collective bargaining. The course will also include a study in price determination.

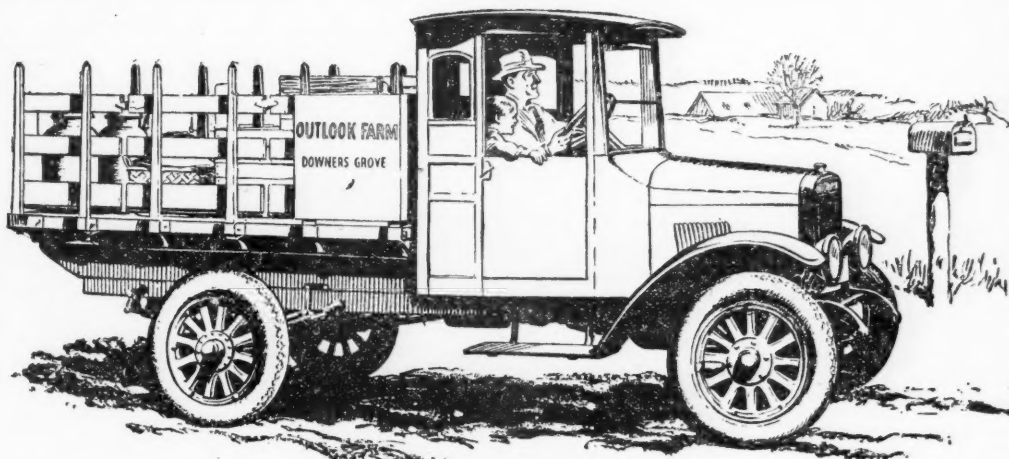
In addition to the courses in co-operation, several courses are offered in marketing, agricultural prices, statistics, etc.

The new courses have been developed in response to a definite demand which crystallized during the 1924 session of the New York State Legislature in the form of an appropriation "to establish a course or courses in the study of marketing and agricultural business and to provide for such research work as may be necessary to properly conduct the study of marketing and agricultural business."

ASET of lantern slides showing the purpose and scope of the Federated Fruit & Vegetable Growers, New York City, has been prepared for use in keeping its membership informed as to the development of the selling agency and its present status in the fruit and vegetable industry. Slides

illustrating the services of the organization to its members and its major activities during the first year of operation are included in the set. Supplementary slides which illustrate the merchandising of fruits and vegetables have also been prepared. The latter show labels used by member organizations, samples of dealer-service material distributed in support of the various selling campaigns of the year, and the type of advertising literature, car cards, price tickets, etc., used. Duplicate sets of these slides will be available to the member associations for field work in behalf of new members and the improvement of morale.

IT IS announced by the National Council of Farmers' Co-operative Marketing Associations, Chicago, Ill., that the third annual co-operative conference will be held in Washington, D. C., January 4 to 7, 1925. A committee has been appointed by the National Council to make a detailed analysis of the bills pending in Congress dealing with co-operative marketing.



FARM HAULING by MOTOR TRUCK

FARMERS in every section are turning their hauling over to good motor trucks. There are plenty of practical reasons for the change.

The motor truck owner saves hundreds of hours per year and that means saving expensive labor for productive work at home. The automobile has shown him how to cut time and distance. Concrete and other hard roads are ready for his fast hauling. Distant markets are in easy reach. He is able to sell where prices favor him, and to buy likewise. In marketing his crops he cuts two days of old-style plodding down to a half day. Whatever he hauls—milk and cream, garden truck, live stock, fruit, grain and hay, sand and gravel, etc.—he does it easier and cheaper by motor truck.

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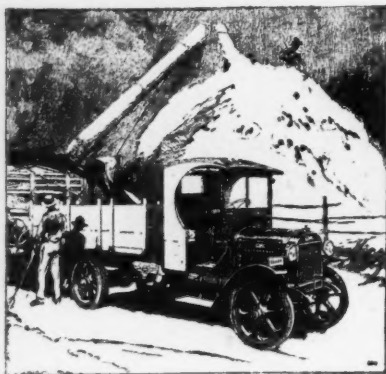
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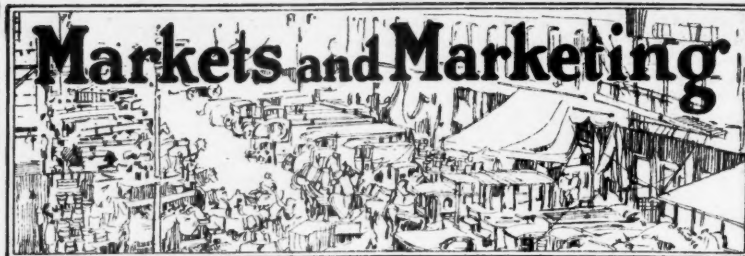
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THE ORCHARD AND GARDEN
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by C. E. Bassett

WHY HAVE the fruit and vegetable growers of the Pacific coast states made such a success of the co-operative style of doing business, while the same class of growers in the East have been so slow to co-operate and so often unsuccessful in their efforts? Are the western growers more intelligent and more progressive naturally? Not at all, for they all came from the East. But the growers in California, Oregon and Washington soon found that their distance from the consuming markets made it impossible to ship low quality, poorly-packed and ungraded products to market. These would not sell for enough to pay the freight. So they adopted the most intensive methods of production, pruning and thinning so as to grow large, perfect fruits. These were carefully wrapped and packed. When it came to marketing, they found that the individual shipper was at a great disadvantage, and so they were forced to unite in groups to get best results.

Most of our fruit producing sections in the East are but a few hours distant from a market, and even cider apples have been shipped at a profit. Being able to sell low-grade apples results in our growing that kind. We can throw a lot of ungraded apples into a barrel, squeeze the head in until the cider squirts out of the cracks, send them off to some city commission house and possibly get enough back to keep us going for a time. Because we can get by with this kind of "marketing," we do not feel so great a need for something better, and so our methods of growing, harvesting, packing and getting rid of them have not met the requirements of the trade and the consumer.

So we see that the disadvantage of distance from market is one of the reasons why the western grower has become a better producer, a more careful packer, a true co-operator and a more successful business man. Go into any city market in this country and you will find apples that have come from 1000 to 3000 miles to market that are in better condition than local apples that may have been produced almost in sight of the market place. Just as long as eastern growers will persist in trying to market everything that may grow on an apple tree, just so long will Wenatchee, Yakima, Hood River and other western towns continue to dominate the apple markets of this country and the old world.

Yes, I know that the West has more young orchards, and that there are less cloudy days out there, and that they sometimes have enough irrigation water so that they do not have to depend upon the rains that do not come. But I also know that there are enormous numbers of young orchards in the East; that the sun has not forgotten to shine even though our "forestry" methods have almost shut off its rays from the fruits that need them to paint their cheeks. I know that we have enough moisture, if we only would conserve it. I am not going to start any riot by comparing the quality of eastern and western fruit, but I do know that the consumer would rather have a well colored, perfect specimen of a fair quality fruit than to buy fruits of a naturally high quality, but that are lacking in color, imperfect and either bruised or rotten.

The East has the advantage of being able to put fruits and vegetables on the market in better condition and at much less cost than can the West.

We could get greater benefits from co-operation than our distant neighbors, but we do not do it. What right have we to kick, when we turn our advantages into a disadvantage?

APPLE growers are interested in the future of their business and a recent survey of the principal apple-producing sections brings out some facts that will have a strong bearing on the future markets. For many years New York state growers held the lead in production, but Washington, with its great Wenatchee and Yakima valleys and the Spokane section, has come to the front in the amount of commercial apple shipments. Not only in quantity, but the high quality of her grade and pack places her at the head.

It is doubtful, if a tree census were taken of the whole United States, that we would find as many apple trees in existence now as there were in some former years, but the old farm orchards have been wiped out by neglect, and the commercial orchards that are left count more in matters of production, because of their better care.

The West has had some very disastrous experiences and has learned that only the best varieties in the best orchard locations can hope to pay. Their new plantings will hardly make up for those destroyed, and a decided reduction in western acreage is looked for in the next few years. The great apple belt, which includes southern Pennsylvania, Maryland, West Virginia and Virginia, will soon be the greatest apple producing section in the world. This is due to the large number of young orchards just coming into bearing. New York is still increasing her acreage and practically every apple state of any importance reports some increase in acreage.

Not only has the acreage increased, but the new plantings are of a better class and are confined to the varieties most in market demand—Jonathan, Delicious, McIntosh, Stayman, Grimes, etc. But this report should not be discouraging to the good grower. Broken markets are not so much the result of too many apples, but rather from the effect of too many poorly grown, off colored, imperfect, ungraded, carelessly packed windfalls and bruised fruits that are offered as apples to a discriminating public. The grower who can and will give the consumer what he wants will stay in the game and prosper.

EXPORTS of apples from the United States from August 1, 1923, to March 31, 1924, totaled 1,917,224 barrels and 5,516,295 boxes as compared with 565,130 barrels and 3,253,281 boxes during the corresponding period of the previous season. This represents an increase of 21 per cent in barreled shipments and of 70 per cent in shipments of boxed varieties. The United Kingdom, as usual, provided the chief export market, having taken during this period 85.1 per cent of the barreled exports and 61.8 per cent of the boxed exports. One reason for the increase was no doubt the increased demand for apples on the continent, a considerable proportion of which was supplied by re-exports from England. Our exports to the British market from August 1 to March 31 consisted of 1,632,071 barrels and 3,409,687 boxes as compared with 468,003 barrels and 2,413,315 boxes during

the corresponding period of the previous season.

Communications received from the United Kingdom and Continental Europe indicate that the demand this coming season will be greater than that of the past season. In Germany practically all of the well known firms who handled American apples before the war have indicated their intention to resume activities, and a number of them are sending representatives to this side to re-establish connections in the barreled and boxed districts.

OPENING prices on 1924 apricots were announced by the California Prune and Apricot Growers' Ass'n, San Jose, Calif., and within five days approximately 3,500,000 pounds had been sold. These prices are based on a careful estimate of the crop and an analysis of the market. Early in July the manager announced that about 50 per cent of the 1924 crop had been sold and all brokers, both foreign and domestic, were notified that the association for the time being would make no further sales of apricots, as it was impossible at that time to estimate what the deliveries might be. Prices on several varieties have been advanced.

Payments ranging from two cents to six cents a pound on the different grades are being sent to growers immediately on receipt of grade sheets from the packing houses. Payment No. 3 on 1923 apricots was sent out in July, at which time about 1,000,000 pounds of 1923 apricots, in storage, on consignment and in transit remained to be sold. Plans were also being made for a fourth payment.

Arrangements had been made with the banks to borrow on warehouse receipts up to two-thirds of the market value to take care of first payments on the 1924 crop, but in view of the volume of sales already made, it is believed that the association will be able to finance delivery of the entire apricot crop without borrowing any considerable sums. A substantial saving in interest and carrying costs will result from this policy and it will be possible to pay the growers more promptly.

Opening prices on prunes were given out June 30. During the first 12 days of July, sales totaled 12,070,000 pounds, as compared with 3,500,000 pounds in the same period last year. Substantial sales of 1923 stock are reported, the prices having been reduced to meet the market. Five million pounds of the smaller sizes (of the 1923 crop) have been sold in Europe since July 1. The export manager believes an excellent market can be developed in those European countries that raise only enough fruit to be used in a fresh state and are without native fruit during the winter months.

COPIES of over 600 trade-marks used by about 300 co-operative associations marketing fruits have been collected by the Division of Agricultural Co-operation of the United States Department of Agriculture. Fruits valued at hundreds of millions of dollars are marketed each year under these marks which guarantee the quality of the products. The marks are the symbols of the business good will of the various associations using them.

Under the trade-mark act of February 20, 1905, a trade-mark which is identical with a registered or known trade-mark, owned and in use by another, cannot be registered if applied to merchandise of the same character. Because of this law, it behooves the co-operative associations considering the adoption of trade-marks to make a careful search in the registered trade-marks and also among the unregistered trade-marks.

A trade-mark must not consist of scandalous or immoral material, nor must it comprise the flag, coat of arms, or other insignia of the United States, or any imitation of them. Again, a trade-mark must not imitate the flag or coat of arms of the state or municipality of any foreign nation, or of any design or picture adopted

by any fraternal organization as its emblem.

It is further provided by the law that any name of distinguishing character adopted by any institution, organization, club or society, which was incorporated in any state of the United States prior to the date of adoption and use by an applicant, shall not be registered as a trade-mark.

No mark which consists merely of the name of an individual, firm, or corporation, not displayed in some distinctive manner, shall be registered. There are several exceptions in the law to this last statement, and under the later practice there are doubtless many valid marks which would fall within the broad terms of the language of the act, but which are nevertheless good trade-marks.

A name which is merely descriptive of the goods or denotes a geographical origin, should be avoided as these trade-marks are not registerable, and in case of court suit may be declared invalid. It is dangerous to employ a mark which is too descriptive of the goods to which it is applied.

Geographical trade-marks are often held invalid and are not registerable. The trade-mark "LACKAWANNA" for coal was declared invalid by the United States Supreme Court as descriptive of the Lackawanna Valley from which the coal came.

DATA collected from over 600 associations having fruits and vegetables indicate that the associations of this type using marketing contracts have 73.1 per cent of the membership of all fruit and vegetable associations and are credited with 78.3 per cent of the total business of fruit and vegetable associations.

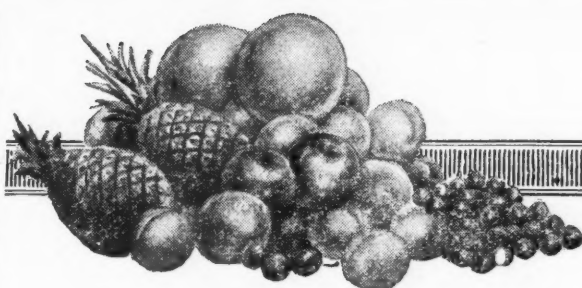
The number of associations which reported regarding the use of marketing contracts and reported membership was 646. Their total membership was 127,805. Of the total number, 427 associations using the marketing contract reported 99,346 members, 78.1 per cent of the total number.

Five hundred nineteen associations reported regarding contracts and reported total business for 1922 amounting to \$169,679,000. Of these associations, 344 reported 1922 business amounting to \$132,874,000, 78.3 per cent. The percentages for the geographic divisions in which fruit and vegetable associations are the most numerous, are as follows:

Geographic Division.	Associations Using Contracts. (%)	Membership Under Contract. (%)
United States	64.6	78.1
Pacific	78.7	96.7
Middle Atlantic	78.6	69.9
South Atlantic	69.5	40.4
East North Central	48.1	47.5
West North Central	33.8	48.0

WHEN the Lake City, Michigan, Co-operative Marketing Ass'n was organized several years ago, each charter member paid a small cash amount and gave his note for \$100. These notes were used as collateral in borrowing funds, although it was understood by many members that payment never would be demanded, as it was expected the association soon would be making money. As a matter of fact, the association lost money instead of making it, the majority of the losses being occasioned by slumps in the market and bad accounts. About a year ago it was decided it would be necessary to collect these notes. The matter now has come to a head, the first of the series being one given by Frank Frye of Pioneer township. The association won the first suit when a jury returned a verdict that Frye would have to pay. Five similar suits were brought at the same time, but it was agreed the other cases would rest until the Frye case had been settled, even if carried to a higher court.

THE CALIFORNIA grading rules for grapes, recently adopted, have been published in Special Bulletin 46, copies of which may be obtained free from the Department of Agriculture, Sacramento, Calif.



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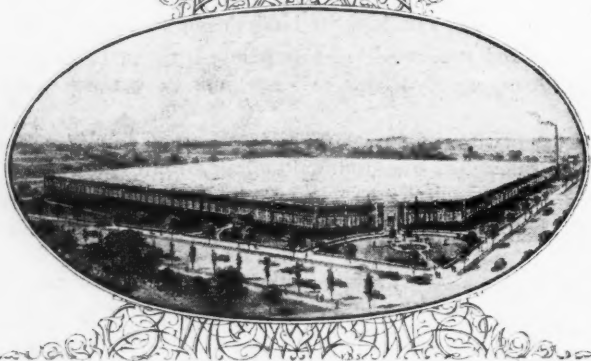
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Three Big Problems of Agriculture

Editor, AMERICAN FRUIT GROWER MAGAZINE: I am seriously considering turning over a considerable sum of money to be expended over a period of time, towards building a greater industry emphasizing diversification, balanced farming, more efficient methods with dairy cows, hogs and hens.

I am writing many men—the leaders in your state—for their opinion.

Will you at your earliest convenience, write me what you believe to be the three greatest agricultural needs in the territory with which you are familiar?—J. A. W., Illinois.

ANSWER: It seems to me that the biggest problem before the agriculture of this section, as well as that of the entire country, is an economic one. It has been the policy of our government to extend encouragement and protection to other industries, but there has been little of this extended to agriculture. A great many of our large business and industrial organizations are practically subsidized by the government. In other words, they are given the opportunity through laws, franchises and court decisions, to assure themselves a fair profit on their investments, no matter what the conditions may be. The fact that so many groups are well organized, gives them also an advantage in this direction.

After all, we are simply one great family. Because of the complicated nature of our civilization, we have become specialists. The profits from our combined land, labor and capital make what is called the "national income." If certain groups, through special advantages of one kind or another, obtain more than their just share of this national income in proportion to the service rendered by them, this means that some other groups must obtain less than their proper share.

Agriculture has been in this condi-

tion for some time though few people have realized it until recently. Farming has never been profitable, when all the items of upkeep are considered. The farmer has very rarely obtained a profit that would enable him to maintain the fertility of his land, and enable himself and family to work reasonable hours. The so-called profits in farming have come largely from the increase in land values, rather than from actual profits on crops produced.

It seems to me it would make a very profitable subject for investigation to employ properly qualified persons so that we could determine rather definitely just what the farmer's position is with reference to his share of the national income as compared with that of other groups. Having this information, we should be in a better position to begin attempts at the solution of the problem.

A second big problem before agriculture is greater efficiency in production. The fact is that it costs many farmers too much to produce their crops. This is a broad subject, including such matters as maintenance of fertility, use of the best varieties and breeds, improvement in methods of cultivation, spraying, etc., and greater efficiency in the preparation of the products for market.

A third problem is that of promoting and developing better methods of marketing and distribution of products.

Starting an Asparagus Bed

Editor, AMERICAN FRUIT GROWER MAGAZINE: I want to start an asparagus bed for home use. When is the best time to plant and what are the best kinds of plants to use?—R. E. F., Indiana.

ANSWER: You are thoroughly justified in planting an asparagus bed. It is easy to grow and every fruit farm should have a patch.

One-year-old roots are generally believed to give best results, but two-year-old plants are often used.

The new varieties originated by the United States Department of Agriculture are a distinct improvement over the Palmetto, Argentuel, etc. They produce better and larger stalks which do not branch so quickly, and they bear better. In localities not infested with asparagus rust, the Mary Washington is best, but where rust is prevalent, the Martha Washington should be used. It is somewhat smaller than the Mary but is more rust resistant. You can grow your own plants or you can buy them from nurserymen or seed firms.

You can plant in the fall, provided you have well-drained land. Most growers plant asparagus in the spring, especially in northern sections.

The rows are best opened with a plow. They should be 10 to 12 inches deep and the loose dirt should be removed with a shovel. Rows should be about four feet apart and the plants should be about two feet apart in the rows. If planting is done in the fall, you should cover the plants with at least five or six inches of earth, some of which should be removed in the spring to enable the shoots to push through the surface. If planting is done in the spring, you should cover the plants with only two or three inches of earth. As the shoots grow, the soil should be worked to a level condition. Asparagus should make two years of growth after the plants are set out before cuttings should be made.

Shot Hole Fungus

Editor, AMERICAN FRUIT GROWER MAGAZINE: I am sending you enclosed some peach leaves. The leaves become spotted and finally the diseased tissue falls out, leaving the leaves full of small holes. Small spots are also on the peaches. The Hale variety seems to be the worse infected.—A. J. J., Arkansas.

ANSWER: The peach leaves seem to be affected with shot-hole fungus, a disease which is quite serious in Middle West and eastern peach sections. Unfortunately, the disease is not thoroughly understood. It is caused by bacteria.

It has been noted by many investigators that poorly cared for trees are much worse affected as a rule than well cared for trees. The best known method of combatting the disease is to keep the trees growing fairly vigorously. The use of nitrate of soda and cultivation have helped to keep the disease in check but have not eliminated it. You should be careful, however, not to stimulate too active a growth, especially in late summer. The same disease also attacks plums and cherries. Spraying seems to be of little or no value in controlling shot-hole.

Handling a Cowpea Cover Crop

Editor, AMERICAN FRUIT GROWER MAGAZINE: I have 10 acres which I am preparing for a young orchard, and have planted cowpeas on the same. Will it be best for the trees to plow the crop under or cut it for feeding purposes?—J. E. K., Tennessee.

ANSWER: Cowpeas are excellent for building up land. They furnish a large amount of organic matter and collect considerable quantities of nitrogen from the air. The question you should consider is: "How can the crop be handled for the best benefit of the young orchard?"

Dry cowpea vines have about 43 pounds of nitrogen to the ton. Under average conditions, the nodule bacteria obtain about two-thirds of the nitrogen from the air, and the other third is taken from the soil. In poor land, the proportion of nitrogen extracted from the air is larger, and in rich land, smaller.

The nitrogen content is uniformly distributed throughout the plant, top and root.

Now, it happens that the cowpea plant is about eight-ninths top and one-ninth root, dry weight. Therefore, you can see that if you cut the crop and remove it, you will remove

all the nitrogen obtained from the air and two-thirds of the amount taken from the soil. As a matter of fact, when you grow a cowpea crop and remove it, you actually leave the soil poorer in nitrogen than it was. From the standpoint of the orchard, therefore, it will be best to plow the crop under. This should be done at any time after the cowpeas reach full bloom and before the leaves become dry and begin to blow off the field.

However, if you are in position to feed the crop advantageously, it may be best to remove the crop and return the manure to the land. Animals digest only a small proportion of the fertility in the feed. Some fertility would, of course, be lost by leaching and oxidation of the manure in the barnyard, but the gains of the animals would probably more than offset this, looking at the matter from a profit-making standpoint. Of course, if you feed the crop, you should take the best care possible of the manure, return it to the soil, and plow it under at the earliest opportunity.

P. D. B. for Apple Borers

Editor, AMERICAN FRUIT GROWER MAGAZINE: Can you tell me if paradichlorobenzene has been successful in controlling apple tree borers without injury to the tree? Have often seen it advised for control of peach tree borers, but how about apple borers?—H. A. D., Iowa.

ANSWER: I am sorry to say that paradichlorobenzene cannot be used successfully on apples. The apple tree seems to be particularly susceptible to injury by paradichlorobenzene. Furthermore, the apple tree borer has a much longer life cycle than the peach tree borer. While the peach tree borer has a life cycle of one year, the apple tree borer commonly requires three or four years for its life cycle. During part of this time the larvae are imbedded deep in the wood of the tree and often the holes by which they entered become closed, either through growth on the part of the tree or from exudations of the insect.

Horticultural experts in general are agreed that paradichlorobenzene cannot be used successfully for the control of apple borers.

Blackberries From Seeds

Editor, AMERICAN FRUIT GROWER MAGAZINE: Please let me know if blackberry seed will produce fruit like the parent plant. I have several extra nice plants fruiting, but not enough to start a new patch.—F. H., Pennsylvania.

ANSWER: I regret to advise you that blackberries will not come true from seed. You may get some seedlings that will do fairly well, but you will probably get a great many that will not be as good as the parent variety.

Blackberries are quite easily reproduced from the root suckers and you can propagate some new plants quite easily and rapidly by this method. Of course it may take you several years to get a large enough number of plants to start a new patch, but by transplanting each year every new sucker that shows itself, you can, in a few years, secure a large number of new plants.

Banana Growing Expanding in Panama

A NUMBER of large companies have recently been organized for the purpose of growing bananas in Panama. The lands surrounding Gatun lake are said to be particularly favorable for the culture of this crop. It requires only 15 to 16 months from the first planting for fruits to be produced for export, so that results are forthcoming in a comparatively short time.

During May 51,210 bunches were shipped from Colon-Cristobal. During the same month, the exports from Bocas del Tero reached 271,000 bunches.

Have you noticed how interesting your most tiresome neighbor seems when you haven't seen a soul in weeks?

The Orchard Home Department

Names That Make Pictures

WALT WHITMAN, esteemed by many as the foremost American poet, delighted in the sound of names. They rang in his ears like music and he made them into poems. That's what he called them—poems. One of these poems, if memory does not play me false, went something like this:

Oh, the wild joys!
Ohio, Kentucky, Tennessee joys,
Mississippi joys, Missouri joys,
Nebraska and Colorado joys!
and so on as long as the 48 states held out.

Not being a poet, names affect me more like pictures. They call up scenes before me, scenes perhaps long since past and gone. Come with me down these pleasant English streets and country roads. Let us read the quaint signs over these old inns and see what we can see.

Here is "Ye Olde Cheshire Cheese" and sure enough, there goes the coat tail of portly, pompous Dr. Samuel Johnson of dictionary fame. In full bottomed wig, long stockings and knee breeches he and his cronies drop in to discuss, over foaming flagons of ale, all the gossip of London town and a perfectly huge venison pastry.

And here, in beautiful Richmond park, behold these Lords and Ladies, a gay company dressed for a river festival on the Thames. They are sipping tea at "The Lass o' Richmond Hill" and nibbling at the sweet little Maids of Honor for which the inn is still famous.

At the "Hog in Pound" there seems to sit a humbler set with jolly red noses stuck deep in mugs of beer. There they sit and swill till all hours. At last, as the sentimental poet tells us, a little girl comes to stand outside the "Pub" and sings, "Oh, father, dear father come home with me now, the clock in the steeple tolls one."

There seems a touch of irreverence about that sign "Ye Olde Queen's Head" and we're frankly puzzled as to what we find here. "Cakes and ale" is as good a guess as any. We don't see them quite clearly. But ah! when we come to "Ye Olde Nag's Head" or "The Coach and Horses," anyone with half an eye perceives that dashing highwaymen were wont to hold up the stage coaches just around that lonely bend in the road.

Having securely trussed up the stage driver and casually "pinked" Papa in the arm, they gallantly kiss the fingers of fair and frightened daughters whom they help to alight. Then off they go with purses and jewels, while pater familias rehearses in imagination the tale he will tell of his personal prowess when he has reached the safety of the Inn. Can't you almost hear his valiant boast? "Seven of the eleven I slew."

A less exciting but highly picturesque scene awaits us at the "Hostel of the God Begot" in the reverend town of Canterbury. Here Chaucer's pilgrims form a colorful pageant. Which of them is your favorite? Mine is that lovely youth of whom we read that his garment was "embroidered as it were a meade all full of freshe flowers white and reid."

"God's Providence House" commemorates the fact that its inmates were there miraculously preserved in time of great perils and tribulation and piously proclaimed the fact to posterity from the doors of the building. Far other moods are suggested by "The Happy Mag." Here, if you'll take my advice, you'll hide your face in your hands as we pass, taking just a peep through your fingers when the echoes of rollicking mirth issue from the open door.

The prettiest scene of all greets us at "The White Hart Inn," a vision of Robert o' Lincoln, "Robin Hood" and his merry men in Lincoln Green drawing the long bow as they chase the fallow deer in Sherwood forest. Passing "Eagle and Child" we shudder as there comes to mind the legend, very likely a true one, of the monster bird

swooping down and carrying off a baby in his talons.

Oh, no, the road is never dull in old England. What a strange menagerie is formed by "Ye Olde Beare's Paw," "Elephant and Castle," "The Red Lion." What romantic tales each suggests. So we go on and on. Dreaming, dreaming.

Where We Are Lucky

SURELY you've heard that the American husband is the best in the world. When women of other nationalities comment upon this and contrast the helpfulness and consideration of our husbands with the lack of those qualities in their own, we fully realize our blessing.

You, orchard wife, who reads this, has your husband ever helped you wash dishes? Of course he has. Has he taken pleasure and pride in installing conveniences to lighten your work? I should say so.

Now hear a lively British matron tell of the Sunday afternoon when, with every maid gone, she was left alone to prepare supper while her husband and a caller who "simply wouldn't go home" chatted by the fire which she kept up for them.

Being a lady of spirit, this wore on her nerves until at last she gave the warning, "If you two expect to eat the supper I cook you must jolly well help with the dishes afterwards."

Amazement and laughing agreement followed but, when the dishes were all washed, the guest was still carefully rubbing the towel up and down between the prongs of his first fork, while the belated husband burst in with a self-righteous expression and said, "My dear! I've put away the pepper and salt in the side board."

Yes, we're very ready to own that the American man is the most generously helpful, but when it is added that the American woman is completely spoiled by him, we're not so pleased to agree. We like to think that she is as deeply concerned for his welfare as he is for hers. Yet how would the impression have been created save by some selfish wives?

Bird Makes Debut in Radio

THE LOVELY country of Surrey, England, is the favored haunt of the nightingale, sweetest of all feathered singers. It is also the home of a talented musician who has the happy faculty of awakening with the notes of her cello the answering strains of the nocturnal songster.

This happy combination could, at best, be enjoyed by but few people until Radio stepped in to spread the delight far and wide. Evening and moonlight in a Surrey garden. The cellist, skilled to evoke the rivalry of "Philomel," drew a few notes from her instrument. Immediately the great little singer responded with a rapturous flood of melody.

The broadcasting was a perfect success. Even in the distant Scotch Highlands where no nightingale had ever been heard, all who "listened in" were enchanted by the sounds rippling out from the tiny throat so far away. "Marvelous!" said some. "Eerie!" said others with a little shiver. "Exquisite!" exclaimed one and all. No single bird ever before entertained so large an audience.

Genius and Common Sense

THE MODEST possessor of common sense chuckles to learn that the redoubtable mathematical genius, Prof. Einstein (author of a book so brilliant that no one could understand it) was worsted in an argument with a street car conductor from whom he demanded a penny more change. The conductor, as he proved his point, remarked, "I see you are weak on arithmetic."

Sulgrave Manor, America's Shrine in England

ARRIVED at the beautiful old university town of Oxford, the American, who is in danger of becoming dreamily enfolded in its peaceful academic atmosphere, becomes aware that he is expected to visit Sulgrave Manor. Not to do so would reflect on his patriotism, and be, at the least, a grave breach of international etiquette. Usually it takes no urging to start us on our way, many having come with the express purpose of paying their respects to this American Shrine in England.

The name of Sulgrave Manor has only comparatively recently begun to appear frequently in our writings and conversation. If we continue to visit England in increasing numbers, it will soon be as familiar in our ears as that of Mount Vernon itself. Sulgrave Manor may indeed be regarded as a stepping stone to the home of George Washington on the Potomac, for it was there that the ancestors of our first President lived, highly honored and esteemed, for generations before little Virginian George cut the cherry tree, or (being grown to manhood) made the family name more famous in the New World than ever it was in the Old.

How We Reach Sulgrave

Since we are on our way to revive memories of those old days whence sprung our nursery rhymes, it would be quite fitting if we could "ride a cock horse to Banbury Cross," but alas! custom and the age are too strong for us. The nearest approach to a cock horse we can find is a char-a-ban in which, along with other sightseers, we roll cheerfully past the much-sung market cross of Banbury.

Practically every old English town has a market cross which, as often as not, bears no resemblance to a cross at all. The head of a unicorn atop a tall pillar, serves apparently just as well and has an even more quaint effect. Markets are still held in the open square around these crosses, the people from the neighboring countryside coming in with all sorts of produce for sale.

But though the market of Banbury Cross has endured to this day, the survival of the famous Banbury bun is more generally appreciated. Those passing through the town by train may buy them, lusciously stuffed with plums, from boys who cry them on the station platform.

Church of the Washingtons

Still miles from Banbury lies Sulgrave Manor, which we approach through wide-spreading green fields and a straggling old-world village, where crops of spring flowers wave on the thatched cottage roofs and sagging stone walls.

Up on the verdant hill to the left, stands the church where the Washington family worshipped. Wall tablets and curiously wrought plates of brass sunk in the paving of the aisle, commemorate the virtues and mark the last resting place of those from whom our George inherited the splendid qualities which placed him in history as the foremost man of his time.

We may comfortably picture these worthies seated in the big front pew of the ancient stone church, but it is painful to imagine the scene which used to take place at that long narrow slit in the wall at the other end of the sacred edifice.

Here came the pitiful lepers, shunned by all and admitted to the rite of the sacrament only when the bread and wine might be pushed to them through the safeguard of several feet of protecting stone.

There were a considerable number of these unfortunate creatures in the British Isles. Along with other importations, it was brought back to

England from Palestine by the crusaders. For a time it spread, but received its first considerable check in the Great Fire of London in 1666. After this the horrible disease diminished, until today a leper is as rare in Britain as in the United States.

Under Two Flags

Winding down through the village, we approach the site of Sulgrave Manor. Trim and attractive it stands in its well-kept lawns and gardens. Apple trees shade the velvet turf of the terrace, and the quaint figures of a cock and hen in clipt box guard the entrance doors.

The eye is caught at once by the flags that decorate either end of the terrace. Here float the Stars and Stripes and there the Union Jack is unfurled. Most fitting this under the circumstances surrounding the gracious gift of Sulgrave Manor to Americans by English men and women.

It forms a striking illustration of that traditionally generous spirit with which England appreciates a worthy foe. To George Washington, descendant of an old English family, England doubtless owes in great degree the loss of her valuable colonies; yet, once the smoke of battle cleared, he stood forth in her regard not as an enemy but as a wise and brave patriot.

To them it seemed fitting that Americans should own the place so filled with associations of peculiar interest to those who revere Washington as the Father of their Country. Not only was Sulgrave Manor thus gifted to us, but the donors maintained it at their own expense through the stormy years of the Great War when there was no way for us to care for it ourselves.

Origin of Our Flag

Inside the hall we note again the two once enemy flags now intermingled. Here you may study the coat of arms of the Washington family. Look at the stars and bars it shows. What do they recall? Yes, that's right, they are the origin of our own Stars and Stripes. And doesn't it seem fine that the greatest of the Washingtons, who had no use for heraldic devices in America, should have turned the insignia of his family to such glorious democratic purpose?

Various relics of interest attract the visitor. On the walls hangs a very pleasing oil portrait of Mary Ball, the Virginian mother of George Washington. The thing that specially appeals to the women is the enviably beautiful, elaborately carved four-poster bedstead in the "great bed chamber," and the rare and exquisitely hand-worked counterpane that is spread upon it.

A Queen Hid Here

Don't fail to ask to be shown the closet in which Queen Elizabeth, still but a young princess, once sought hiding from her sister Mary. This most untender Queen, deservedly known as Bloody Mary, showed little ruth toward her kith and kin when they stood in her way. They were driven to hide early and often.

How strange it must have seemed to the haughty Elizabeth, once she was securely crowned Queen of England and ruling in "the glorious days of good Queen Bess," to think of the undignified shifts to which she was put in the insecure days preceding her reign.

And, as age stiffened her joints, perhaps she marvelled, as I do, how she ever managed to get into that closet. It juts out from the stair head on the upper landing, and its only door overhangs the hall beneath. None but an acrobat might venture to attempt entrance. Elizabeth, however, was of the type that always "gets there" whether the goal be a throne or a protecting closet in the friendly home of the Washingtons at Sulgrave Manor.

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(Continued from page 5.)

ment, the writer has observed marked differences in the behavior of the trees. It is quite evident that some trees do not pay for themselves, and it is in order to check up and to eliminate such trees that performance records are being kept.

Bud selection for propagation purposes from trees having a record for good production over a period of four to five years, is now generally practiced by most nurserymen and orchardists. Not only does the question of bearing enter into the selection of bud wood for propagation, but also the most desirable characteristics of the fruit itself, such as thinness of skin, the absence of seed and shape of the fruit.

Performance records are not only valuable for the purposes stated above, but they also enable the orchardist to systematically study his trees and become more conversant with their characteristics.

(To be continued in November.)

Opportunity for Marketing

Cider Vinegar

A REPORT of the Department of Commerce states that British people are very fond of vinegar but that American cider vinegar is practically unknown in England. The white wine and malt vinegars are consumed almost altogether for table uses.

Here is an opportunity for American apple growers. The British Isles do not produce nearly enough vinegar to meet domestic demands and large quantities must be imported. It is simply a question of whether the British people can be induced to use pure vinegar made from real apples instead of artificial vinegar made from acetic acid, water and coloring matter. American genius can turn the trick easily so far as handling the product and creating the demand is concerned, but it is a question as to when the apple growers of the country will co-operate sufficiently so that they can take advantage of such trade possibilities.

New Jersey Growers Try

New Plan

THE ORGANIZED growers of New Jersey are trying out a new plan of marketing this season. They are delivering peaches and apples by motor trucks to northern New Jersey cities and to West Washington and other west side markets in New York City. The purpose of the new system is to reduce transportation costs, eliminate waste in marketing, and shorten the route to consumers.

The motor truck service enables the association to make delivery of perishable fruits directly to retail stores, bakeries and other buyers.

Because of the grading and packing methods of the organization, it is expected that this plan of delivery will result in increased demand for the product of members. The sales are being made through the Federated Growers and are being handled by F. J. Boyce and W. J. Kenny.

Ohio Growers Encourage

Home Markets

THE OHIO Fruit Growers' Ass'n after its study of the past year showing that relatively few Ohio apples are used in the state, is making a strenuous effort to encourage greater home consumption.

In line with this new policy, the first car of fruit marketed this year by the association was sold in Cleveland. By putting up well-graded and well-packed fruit, and by accompanying the same with the Buckeye brand and proper advertising, the association hopes to materially increase the consumption of Ohio fruits in Ohio.

CHATS WITH FRUIT

GROWER'S WIFE

By HAZEL BURSELL



Convenient "Built-ins"

BUILT-IN features have come to stay in the modern home. New houses have all kinds of closets, nooks, cabinets, chests of drawers and clothes chutes built right in when they are constructed. People who own the big, old-fashioned type of home, with lots of room but very little storage space, are remodeling to add built-ins.

Built-in bookcases on either side of the fireplace in the living room, and a built-in buffet with china closets at the ends in the dining room, will be handsome additions to any home. They will take the place of other and far more expensive pieces of furniture. They will give the room an orderly effect that is not always achieved by the use of several smaller pieces. To my mind, a fireplace and bookcases with a long mantel extending across one end of the living room, forms a natural center of interest for that room which cannot be surpassed.

Are Real Labor Savers

There are dozens of other built-ins which will be real time and labor savers for the busy housewife, and anything that saves her extra steps is worth considering. Built-in cupboards offer ample storage space with a minimum of floor space taken up. It will be a simple matter for the home maker to have "A place for everything and everything in its place," with neat, compact linen closets, a medicine chest, cooler, shoe drawers, back porch vegetable cupboards, jelly cupboards, etc. Much stress has been laid on patent labor saving devices, but there has not been sufficient emphasis on built-ins as labor and time savers.

The kitchen offers the greatest field for built-ins. No more convenient arrangement has yet been devised than that of a sink with hot and cold water, with drain boards at both ends, with cupboards above the drainboards and pan cupboards below on one side and drawers on the other. I would have a series of shallow drawers extending clear across just under the drain boards, except in the place taken by the bread board. The sink should be under a window so that the worker will always have plenty of light. Besides, she should be able to look out on a cheerful view. The sink and drain boards should be at the height most convenient for each individual housewife—she should neither have to bend over nor raise her arms and shoulders at her work. A high kitchen stool can be kept under the sink, and so can the wire dish drainer if there is no better available place. A towel hook or rack should be near the sink.

Leave No Waste Space

No space should be wasted in the kitchen. The cupboards should extend to the ceiling, the upper parts possibly built with separate doors from the lower. Then this cupboard space, which is too high to reach when standing on the floor, can be very nicely used for storing jellies, dried fruits, or extra household equipment which is not often used.

Most kitchens nowadays have built-in coolers. The cooler should be on a cool side of the house, if possible. It is a series of enclosed shelves with two screened air-holes to the outside, one at the top and one near the bottom to allow for air circulation. The cooler is often built in one portion of the space above the sink, beside the dish cupboards. Refrigerators are even built in in the kitchen. Some of

them are cooled by ice and some by other methods. The latter are expensive as they are new patented inventions.

Think of the steps a wood lift would save! It is most convenient to build when the wood is kept in the basement, but can also be built so that it is filled from the outside of the house. The lift should be near the stove on the inside, and as near as possible to the woodshed outside. Wood lifts mean a minimum of dirt from wood in the house.

If there is a hot water tank, and there should be, this should be enclosed, also, to prevent dust from settling on the tank. The ironing board may fold up to rest in its particular nook in the wall. However, an ironing board of this type is stationary, and some housewives like to move theirs to cooler or more convenient places.

Breakfast Nook Is Cozy.

Breakfast nooks are almost invariably included in the plans for new houses, and many a pantry in an old house has been transformed into a cozy, intimate nook. The breakfast nook must have plenty of light and should have a window to the east if possible. The seats may be built in on either side with a movable table between or a regular breakfast set may be purchased. To my mind the first arrangement is more convenient and it costs less. Can't you just picture such a breakfast room with blue and white and yellow checked gingham curtains, blue and white cloth, and long seat pads with gingham covers to match the curtains? Complete the picture with a bowl of yellow flowers! You couldn't start the day wrong in such a place. Then, too, being right off the kitchen, it saves Mother steps.

Sideboards, china closets and bookcases were mentioned earlier in the article. The bookcases and china closets should have glass doors as the colors of the book bindings and the gleam of glass and china have a decorative effect all their own. The built-in buffet may be merely a series of drawers with a long mirror above, or it may be a combination of drawers and small cupboards with glass panels in the doors. My favorite arrangement consists of a buffet of drawers with mirror above and china closets at the sides, the buffet being two or three inches deeper than the china closets. Then the china closets are higher than the buffet part, their tops being on a level with the top of the mirror. This arrangement might not be suitable for all dining rooms. The buffet should extend across one end of the room. Do not have bookcases and china closets too shallow from back to front to hold your biggest books and dishes easily.

Window seats with storage space underneath have been very popular in certain nooks in the living room, dining room or bedroom. They still are popular in just the right house, and can be very cozy and inviting when arranged below sunny windows with heaps of colorful pillows.

Closets Need Ventilation

Each bedroom should have a closet and arrangements for suitable closet ventilation should be made. One wall space, usually the back wall, may well be given over to a set of shelves for hats, etc. The lower shelf should have a drawer for shoes underneath. The rod for coat hangers may be placed in front of these shelves. It

should be strong and firmly put up. A ring of coat hooks may be placed around the other walls. Closets are most convenient if they have some form of lighting.

Often there will be a small space, say three feet high by two and one-half feet wide by 18 inches deep, which would otherwise be wasted and could easily be made into an extra wall closet. With shelves, it will be an excellent place for various articles of clothing. Why not use every bit of space? I have one in a bedroom built in part of the space above the extension which covers the cellar entrance.

The remainder of the space over the cellar door is taken up by a vegetable cupboard on the back porch. It is most convenient. Some left-over pieces of linoleum are used on the floor of this cupboard and it is thus easily kept clean. For a woman who does much baking, nothing could be handier than a screened cupboard on the back porch for cooling pies and puddings.

A built-in linen closet may be in the hall, if there is one, or it may be in the bath room. The bath room should also contain a wall medicine cabinet. This cabinet need not be deep, the distance between house walls offering sufficient depth. The cabinet door usually frames the bath room mirror. The most effective bath room arrangement I have seen for built-in features had a medicine chest between two small windows at one end of the room. Then below this were two cupboards with a set of drawers between and below the mirror in the medicine chest door. One cupboard was used for towels and bath mat and the other for miscellaneous supplies.

Tomato Preserves and Pickles

ALMOST everyone likes tomatoes in every form—fresh, canned, in relishes, pickles, preserves or sauces. Tomatoes are "good for people"—they are fairly rich in minerals, contain a desirable fruit acid, and are rich in vitamins. The principal vitamin contained in tomatoes is not easily destroyed by cooking as it often is in other fruits. Tomatoes have a delicious flavor, neither too strong nor too indefinite, nor too sweet or too sour. We should not only enjoy them fresh but should preserve them in various ways for winter.

Tomato Preserves, No. I.

Place tomatoes in wire basket and immerse in boiling water till the skins begin to crack. Peel and quarter the tomatoes. Add an equal amount of sugar by weight. It may be necessary to add a little water at first. Boil slowly down to the desired consistency, stirring as often as needed. Pour into jars, boil for 20 or 30 minutes and seal. A little lemon juice and rind will improve the flavor, but the rind should be removed before sealing.

Tomato Preserves, No. II.

Peel tomatoes. To each pound add a pound of sugar, and let stand over night. In the morning take out the tomatoes and boil the syrup. Skim, put in the tomatoes and boil gently 20 minutes. Remove the tomatoes again and boil syrup until it thickens when cool. Put the tomatoes while hot in jars, pour syrup over them, seal and set in a cool, dry place. Slices of lemon or ginger root will give a delightful flavor.

Canned Tomatoes.

Select tomatoes of medium size and evenly ripened. Peel and arrange in jars (wide-mouthed preferable). Add 1 t. salt and a dash of pepper to each quart of tomatoes. Fill the jars with water or juice obtained by boiling a few tomatoes, mashing them and straining the juice. Cap the jars and boil for 22 minutes in a water bath, or until the fruit begins to leave the bottom of the jars.

Tomato Pickles.

35 ripe tomatoes 3 c. sugar
2 qts. chopped 4 T. salt
apples 1 T. cinnamon
10 onions 1 pt. vinegar
8 sweet peppers

Chop the tomatoes, onions and peppers. Add apple and seasonings, cook 1 hour and seal.

Tomato Butter.

Peel and cut up tomatoes and stew till soft. Press through a sieve, return to fire and cook until reduced one-half. Then add an equal amount of stewed apple and to each quart of the mixture add 1 c. sugar. Some spices and the juice and rind of 1 lemon may be added if desired. The lemon rind should be removed before sealing. Cook until of the desired consistency, then while hot seal in jars.

Ripe Tomato Chili Sauce.

50 ripe tomatoes 3 c. sugar
25 onions ½ c. vinegar
12 green peppers 4 T. spices
1 bunch celery 2 T. salt

Chop vegetables, then add vinegar, sugar and spices (allspice, cloves, mace and cinnamon). Boil 2½ hours and seal.

Sweet Tomato Pickles.

¼ pk. green to-
matoes 2 t. pepper
4 onions 3 t. cinnamon
4 green peppers 3 t. allspice
1 c. salt 2 qts. vinegar
½ c. mustard seed 1 lb. brown sugar

Chop or slice tomatoes, onions and peppers; cover with salt and allow to stand over night. Drain and add to vinegar, spices and sugar which have been heated to boiling. Cook 15 minutes and seal in sterilized jars.

Tomato Catsup.

24 lbs. tomatoes 1 lb. green peppers
1½ lbs. onions
Boil 1 hour, strain through fine sieve. To 1 gal. of juice add ½ c. sugar, cayenne, 4 T. salt, 1 T. cloves, 1 t. mustard, 1 t. allspice, and celery salt. Simmer till the desired consistency is reached, then seal in sterilized jars or bottles. If the latter are used, use rubber corks and paraffin or sealing wax to seal.

Rummage Pickles.

2 qts. green to-
matoes 3 green peppers
1 qt. red tomatoes 1 head cabbage
2 small heads ½ c. salt
celery ¼ pt. vinegar
3 large onions 1½ lb. brown sugar
3 red peppers 1 t. pepper

Chop vegetables, sprinkle with salt and let stand over night. Drain well in the morning and add vinegar, sugar and spices. Cook until clear. Put in sterilized jars and seal.

Uncooked Chili.

1 pk. ripe tomatoes ½ oz. mustard seed
2 c. chopped celery 1½ qts. vinegar
6 onions, chopped 2 oz. cinnamon
2 lb. brown sugar Salt to taste

Place chopped tomatoes in colander to drain over night. Then mix tomatoes with other ingredients and let stand a week before using. Place mixture in a stone jar for keeping.

Tomato Figs.

Scald and skin 8 lbs. of small size yellow tomatoes. Add 3 lbs. brown sugar and cook without water until the sugar penetrates and tomatoes are clear. Then take out fruit and spread on platters and dry in sun. Sprinkle over a little syrup while they are drying. Pack in jars or boxes with layers of powdered sugar between. Fruit prepared in this way will keep for any length of time, and may be used in place of figs.

Table of Equivalents.

1 t. = 1 teaspoon 1 pt. = 1 pint
1 T. = 1 tablespoon 1 qt. = 1 quart
1 c. = 1 cup 1 gal. = 1 gallon
1 oz. = 1 ounce 1 pk. = 1 peck
1 lb. = 1 pound 1 pk. = ½ bushel
All measures level.

A clothes chute is especially convenient for a two-story house. It should have openings for clothes on both floors and should convey them direct to a container in the basement convenient to the washing apparatus. It would not be a practical arrangement where the kitchen or a separate building is used for the washroom.

Use Your Ingenuity

These are a few suggestions for practical built-ins. Each house will furnish an individual problem, and each housewife can best decide for herself just which features will be suitable for her home. Her ingenuity will doubtless devise some original built-ins of her own. If she lives in an old-fashioned house, it can be made much more convenient by adding some built-in features. If she is to have a new house, she will want to include many built-in features in her plans.

To get really good results, an experienced workman should decide on the proportions for built-in furniture and should construct the pieces. They are handsome only in their correct design, perfect workmanship and finish. This is especially true of living room and dining room pieces. A careful amateur carpenter should be able to build bedroom closets, back porch cupboards and even kitchen built-in cupboards. They should be well constructed of high grade lumber and given several coats of ivory, white or grey enamel, depending on the color scheme of the house.

A house with suitable built-in pieces can be furnished tastefully, completely and conveniently for much less money than can one which lacks these features.

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New Way to Make Grape Juice

WASH and stem 10 pounds of grapes, put grapes with one cup of water in a granite kettle and heat until stones and pulp separate. Then strain through a fruit press or jelly bag. Add three pounds sugar, heat to boiling point and bottle. Be sure to have the bottles well washed and sterilized. Fill the hot bottles with the hot juice, cork and dip the top of each corked bottle into hot sealing wax so that the cork and top of bottle are well covered with wax and tightly sealed. Ten pounds of grapes should make a gallon of grape juice and this can be adulterated as is necessary.

Another Method for Making Juice

There is another remarkably simple and quick recipe which any child can use. It requires merely one cup of grapes and one-fourth cup of sugar, and some boiling water. Wash the grapes, remove the stems and place them in a quart jar, add sugar and fill the jar with boiling water and seal it. This juice must stand at least a month before it is ready to be used. The grape juice prepared in this manner is ready to be used without being diluted and has a fresh delightful flavor, quite different from the grape juice that has been cooked up first.

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No. 2213—New Fall Style.
Cut in sizes 16 years, 36, 38, 40, 42, and 44 inches bust measure. Size 36 requires 4 yards 40-inch material. Hot-iron transfer pattern No. 708 (blue and yellow) costs 15 cents extra.

No. 2212—Dainty Nightgown.
Cut in sizes 16 years, 36, 40, and 44 inches bust measure. Size 36 takes 3¾ yards 36-inch material. Hot-iron transfer pattern No. 701 (blue only) costs 15 cents extra.

No. 2125—One-Piece Dress for Girls.
See Diagram.
Cut in sizes 2, 4, 6, 8, 10, and 12 years. Size 8 takes 1½ yards 32-inch material with ¾ yard 18-inch contrasting.

No. 1678—Bloomer Dress.
Cut in sizes 2, 4, 6, 8, and 10 years. Size 8 takes 3½ yards 36-inch material.

ORDER BLANK FOR PATTERNS—Price 10 cents each.

PATTERN DEPT., AMERICAN FRUIT GROWER MAGAZINE

53 W. Jackson Blvd., Chicago.

Enclosed find.....cents for which send me the following:

Pattern No.....Size.....Pattern No.....Size.....

Name.....Address.....

Postoffice.....State.....

Fruit Exports Increasing

A MATTER of much significance to fruit growers is the fact that exports of most fresh and dried fruits have shown remarkable increases during the past year. In fact, the exports of dried and evaporated fruits have been larger in the 12 months ending June 30, 1924, than in any previous 12-month period, according to a recent report of the Department of Commerce. The exports of more important fruits and fruit products are shown in the following table:

Exports of Fruits for Year Ending June 30.

	1923.	1924.
Dried and evaporated fruits (total), pounds	213,419,000	320,695,000
Raisins, pounds	93,962,000	88,152,000
Apples, pounds	12,817,000	30,410,000
Apricots, pounds	11,193,000	38,777,000
Prunes, pounds	79,229,000	136,448,000
Oranges, boxes	1,799,000	2,592,000
Fresh apples, boxes	3,491,000	6,198,000
Fresh apples, bbls.	592,000	2,032,000
Grapefruit, boxes	252,000	305,000
Canned fruits, lbs.	207,220,000	165,825,000

These figures bring out very forcibly the increases in exports of practically all fruits. Fresh fruits have shown increases during the past year of 2,706,955 boxes and 1,439,660 barrels of apples; 792,595 boxes of oranges, and 53,000 boxes of grapefruit. Dried fruits showed an increase of over 213,000,000 pounds, all of the individual fruits but raisins showing substantial increases. As to canned fruit, there was a reduction in exports, due, it is said, to decreased buying in England, to which country most of the canned fruit exports are sent.

In general, these figures indicate, more clearly perhaps than anything else could, that conditions are improving in Europe and that the purchasing power of European consumers is improving. This is in line with financial reports from several sources, as well as the opinion of various authorities who have recently visited Europe.

It seems reasonable to believe that the present world shortage of foodstuffs, together with the adoption of the Dawes plan and the establishment of greater confidence in Europe, ought to make export conditions fully as favorable in the coming year as they have been in the past 12 months.

Raisin Consumption Increased

THE SUN-MAID Raisin Ass'n has increased the per capita consumption of raisins 100 per cent in 10 years, according to recent news bulletins.

"Raisiana" stock feed is the name of a new preparation now being made of off-grade raisins, stems, chaff and unripe berries. It is said to be finding a ready sale among stock men. Raisiana promises to provide an excellent outlet for off-grade raisins. At the same time, the use of off-grade raisins in this way will keep the markets in better condition for the higher grades.

The association has recently turned its attention to candies, and several kinds of raisin candies are now being offered for sale throughout the country.

Deep Science

SINCE the early days of astronomy, science has been trying to explain the source of moonshine. Some scientists have held that the moonshine results from the reflection of light from the sun, but others have stated that the moon shines when the earth is directly between it and the sun. Others have held that the moonshine results from heat emanated from the moon, but still others have stated that this could not be so, since the moon is as cold as a cucumber.

The phenomenon, therefore, is still unexplained, and for that reason, "the place where the moonshine comes from is a secret still."

"Farmers are normally the largest buying group in the country. They use 46 per cent of the lumber, twice as much steel as goes into rails, 30 per cent of the automobiles, and \$2,000,000 worth of food annually."

The Breakers

ATLANTIC CITY, N. J.

On The Ocean Front

American and European Plans
Afternoon Teas
Concerts
Joel Hillman, President

FREE Guaranteed Watch, Genuine Leather Foot-ball, Real Moving Picture Machine, Dandy Air Rifle, Choice Given Free for selling only 28 pkgs. of our high grade bottles of perfume and sachet powder at 10c each. We Trust You. Send name and address at once to Nat'l Distributing Co., Dept. 62-E Hartford, Conn.

ALL THIS FREE Gold-plated Lavalliere, 3 Sparkling Stones, and Chain. Gold-plated Nethercole Bracelet, Bluebird Enamel Brooch, pair Lingerie Clips ALL FREE for selling 30 pkgs. Chewing Gum at 5c. BLUINE MFG. CO., 318 Mill St., Concord, Mass.

GIVEN All this jewelry is yours for selling only 6 Boxes Mentha Nova Salve at 25 cents. Wonderful for cuts, burns, etc. Order today. When sold return \$1.00 and all 6 Boxes are yours. U. S. SUPPLY COMPANY, Dept. E22, Greenville, Pa.

BARGAIN OFFER Club No. 14 Today's Housewife - 1 yr. } All Three for American Fruit Grower Magazine 1 yr. } \$1.00 A Dollar Bill Will Do—We Take The Risk American Fruit Grower Magazine 53 W. Jackson Blvd., Chicago

ALL GIVEN 10 Year Guar. Watch, Chain and Ring or New Model Movie Machine with long reel of pictures, directions, tickets etc., given Postpaid for selling only 20 bottles big grade Perfume at 15c. Send No Money. Just name and address. Liquid perfume easiest to sell. BELL PERFUME CO., DEPT. A 353 CHICAGO

Strawberry Costs

IT COSTS \$311.20 to grow and properly ship a 150 crate crop of strawberries, according to figures carefully compiled from the records of J. P. Kennedy, small fruit grower of Montrose, Ia. Mr. Kennedy declares a grower must receive \$2.07 per crate for strawberries to cover the cost and that on prices above this figure a profit can be made.

Mr. Kennedy's books show the following items:

ONE ACRE OF STRAWBERRIES	
Preparing ground	\$ 3.00
6000 plants at \$4 per M.	24.00
Planting, 2 days, man and boy	8.40
Resetting dead plants	2.00
Cultivating, 6 times, man and horse	6.70
Hoeing, 5 times at \$5.40	27.00
Rental on ground—2 years	22.00
Three loads of straw	9.00
Hauling and spreading straw	8.10
150 crates at 36 cents	54.00
Picking at 48 cents per crate	72.00
Shipping expense at 14 cents crate	21.00
Man and team for hauling—30 hours	18.00
Patch foreman, 6 days	24.00
Shed hand and cashier, 6 days	12.00

Total if berries are shipped....\$311.20

In figuring production costs, Mr. Kennedy has been very low on labor, especially where his own is involved. It is worthy of note that in some instances labor has been allowed for at as low as \$2 per day.—M. V. Briggs, Waterloo, Ia.

"THE GEORGIA Peach" is the title of the house organ of the new Georgia Peach Growers' Exchange. It is an excellent publication gotten out in good form and contains some valuable material for members of the exchange, especially from the standpoint of co-operative marketing. The officials of the exchange are to be congratulated on the quality of the publication.

Interesting Decorative Techniques for Walls

by Capitola W. Ashworth

THESE are time of the year when thoughts turn to freshening up the house, both inside and out, to cleaning thoroughly and to redecorating in the most economical, as well as the most satisfactory, way. But cleaning thoroughly means more than just dusting and dry cleaning. It means removing from the surface the accumulation of dust and dirt that has piled up during the season and has sifted its way into tiny cracks and craters in the walls and woodwork.

The housewife in whose home paint has been appropriately used will find that much of the drudgery of the annual housecleaning is eliminated. Painted walls and woodwork can be made fresh and bright by simply washing with soap and warm water. Nor is the ease with which they are cleaned their sole merit. To the contrary, they have many additional virtues.

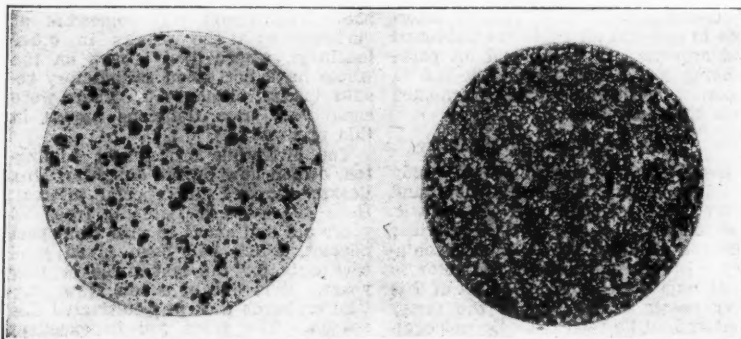
Sanitary Advantages of Paint

Perhaps the chief value of painted surfaces lies in the fact that they

town. An unpainted house or farm decreases in value the moment decay is allowed to set in through the ravage of the elements. There is less loan value and less chance of selling.

New Artistic Effects

Then, too, one must consider the beauty of painting in interior decoration and the many variations possible with this decorative medium. There are any number of new and interesting techniques. There is, for instance, the two-tone effect. Two colors are chosen, different shades of the same color as brown and tan or related colors such as light green and yellow green. The wall is then painted with one of these colors. When this is dry, the second color is applied over the first in sections about four feet wide. Then a large sheet of newspaper, crumpled into an elongated wad and held in both hands, is placed against the wet paint and rolled over and over down the wall. In this manner, portions of the wet coat are removed so that the color



Life size examples of air stippling for painted walls, applied in spray form on painted wall surfaces

have hygienic properties which every householder should seriously consider. Rough, hard-surfaced cement or plastered walls, wooden walls or walls of compressed paper board, or of any similar material, if unprotected by paint, are porous. Moisture is absorbed readily and retained longer, producing a condition of unhealthful dampness. Such surfaces also contain small craters in which dust can be deposited.

And because such surfaces cannot be washed, this organic matter cannot be removed. It presents a congenial lodging place for bacteria. But disease germs cannot readily find a breeding place where walls are freshly painted. The value, therefore, of oil varnish paints is that they form a waterproof film on wood, plaster or cement and thereby prevent the accumulation of dust and disease-producing germs.

On the other hand, surfaces covered with wall paper prove an excellent resting place for germs. When an infectious disease is treated in the home, the local health board provides for proper fumigation. But sometimes the burning of sulphur will cause the delicate colors used in wallpapers to fade. Disagreeable odors, too, are absorbed by porous surfaces and are extremely hard to exterminate. Painted walls, however, do not absorb these odors.

For these reasons hospitals and other public institutions, as well as hotels, have recognized the value of a colorful waterproof painted surface in fighting disease.

Painting Adds to Value

Aside from its sanitary service, paint has a decided economic effect upon the home of the individual, and upon the community as a whole. A town or village in which the houses are neglected, soiled and unpainted, the most casual observer will recognize at first glance as a second-rate

of the under coat shows through. The resulting design is free from formality and is original and spontaneous.

Somewhat similar effects can be obtained by using a coarse cloth, an old Turkish towel, or a sponge instead of a newspaper. Also, extremely important because of the small cost, is the fact that a single coat of paint will give the room a new color scheme and spots and stains are removed without doing over the entire room.

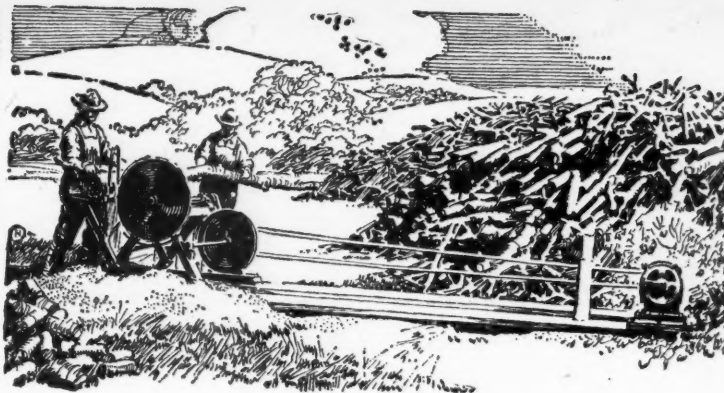
Stipple Work

Another attractive and easy two-tone effect is sometimes called stipple work. When one speaks of stippling a wall, it means striking the paint while still wet with a stippling brush, giving it an interesting rough or pebbled texture which eliminates brush marks. A light underbody and a dark finishing coat are excellent for large rooms or upon large wall spaces, while a dark undercoat and a light finishing coat are preferable in small rooms.

Spray spatter finishes are entirely new and were unknown until mechanical painting equipment was brought up to its present standard of efficiency. These effects are obtained by painting the walls with the desired ground coat. Then without waiting for the ground color to dry, harmonizing spatter colors are applied with exceedingly low air pressure. There is opportunity for many unique effects by using paints that dry to a flat, semi-gloss and gloss finish.

Lace Stencil

All of the above methods may be used effectively in panels while the wall between the panels is finished in flat color. Beautiful panels may also be made by using lace as a stencil. The lace is first varnished to make it stiff. It is then attached to the wall and the paint brushed through the lace, care being taken to apply the brush directly and lift it



Just Common Sense

FARM electrification, like farming itself, is a matter of common sense.

Farmers do not want electricity unless they can use it profitably.

But how can they learn to use it profitably? By experiment.

That is exactly what is now being done.

A National Committee of economists and engineers has organized state groups of farmers to whom electric service is now rendered. Each state group, with the assistance of its agricultural college and farm-paper editors, applies electricity in old and new ways. It keeps accurate records of operating and producing costs for comparison with the costs of unelectrified years. Electricity is being adapted to farming, and farming to electricity.

From time to time the results of these experiments will be made known. Farmers will not have to wait years before they can throw switches and fill silos electrically.

Even those farmers who have long had electricity, because their local conditions made it profitable to apply it, will receive the benefit. For they will see how they can make even greater use of electric service.

Thus the common-sense method of gathering the facts experimentally is helping along the work of farm electrification.

The Committee in charge of the work is composed of economists and engineers representing the American Farm Bureau Federation, the Departments of Agriculture, the Interior and Commerce, the Power Farming Association of America, the American Society of Agricultural Engineers and the National Electric Light Association.

A booklet has been published by the Committee. It will be sent on request free of charge. Read it and pass it on to your neighbor. Write for it either to Dr. E. A. White, American Farm Bureau Federation, 58 E. Washington St., Chicago, Ill., or to the National Electric Light Association, at 29 West 39th Street, New York City.

NATIONAL ELECTRIC LIGHT ASSOCIATION

straight up from the lace without smudging.

People so fortunate as to possess rare paintings or porcelains tell us that half the pleasure of such ownership is in the knowledge that the art objects cannot be duplicated; in short, it is their exclusiveness and originality that make them so desirable. Just so with painted walls which have been decorated in any one of the newer techniques. No two are ever alike.

Painted Surface Cheapest in Long Run

With surfaces thoroughly dry and good paints properly applied, wall decorations of this kind will cost little more than other types and will last much longer; in fact, to bring it down to an absolute matter of dollars and cents, the painted surface is cheaper than one treated in some other way. Though the initial cost may be slightly higher, in the long run it will be cheaper, for it will not be necessary to refinish your walls as frequently. Furthermore, the painted surface itself lasts longer than one which has not had such treatment, so that entirely aside from their artistic aspect, the painted walls are desirable from a strictly economic viewpoint.

Pecan Leaf Case Bearer in California

THE PECAN leaf case bearer has recently been introduced in Los Angeles county, California, on some pecan trees brought from Monticello, Fla. The insect escaped detection because of its practically microscopic character in the stage in which introduced.

When insect growth started and the pest reached another stage in which detection was readily possible, steps were immediately taken to stamp out the insect. Inspectors detailed to this work succeeded in locating all but 15 of the imported trees. Arrangements were made to spray all walnut trees within one-fourth mile of known plantings of the pecans which were infested. In addition, a number of suspected areas are being sprayed with lead arsenate and casein. The authorities hope to stamp out the pest, if they have not already done so.

Tommy: "Have you ever come across the man who could make you tremble and thrill in every fiber of your being at his very touch?"
Peggy: "Yes, the dentist."



Motor Truck on the Fruit Farm

by E. W. Lehmann

THE PRICE that many farmers get for their products depends on getting them to market quickly and in good condition. This is especially true of fruits and vegetables. The motor truck not only makes it possible to get fruit on the market quickly and in good condition, but also makes it possible to reach a better market. The chief requirements to make the purchase of a motor truck a good investment are fair roads, with sufficient hauling to do.

During the busy shipping season when the cars are on the track ready to be loaded, trucks not only make it possible to load more quickly but at less expense than if teams are used. A prominent Illinois fruit grower hauled from 2400 to 2800 bushels of peaches a day one and one-half miles to the railroad with two trucks, at a hauling cost of about one cent per bushel. He stated that if teams had been hired the cost would have been five to 10 times as great. As will be noted, this was on a short haul. Most advocates of the use of a truck for farm hauling or city hauling point out that short hauls can best be made with teams. This depends on the amount of time taken in unloading as well as the distance hauled. If the loading and unloading can be accomplished quickly, the truck will pay on short hauls. Ordinarily, however, when a fruit or vegetable grower is located near his market and the delivery is peddled direct to the consumer, the truck will be found less satisfactory than a wagon and team. On the other hand, there are many fruit and vegetable growers living at some distance from market who find it possible to make deliveries direct to the consumers by truck when it cannot be done with wagon and team.

Trucks Save Time on Long Hauls

Every farmer who hauls from a distance appreciates the time-saving value of a truck. Long trips to new markets, where there is a greater demand, are often made with a truck that would not be considered with a team. This wider range of markets may result in successful disposal of products where otherwise there would be a loss. The following example illustrates how the truck benefited both the consumers and the producers. Farmers near St. Ansgar, Ia., were selling potatoes to buyers at the local railroad station at 90 cents a bushel; it was found that at Mason City 24 miles away, on another railroad, people were paying \$1.75 a bushel for potatoes at the grocery stores. A truck line was started and the farmers were paid \$1 a bushel, and the cost to consumers was reduced to \$1.25 a bushel.

Truck Advertisises Product

Few farmers appreciate the value of advertising in their business. If a person has something to sell, he must keep everlastingly telling folks about it; the truck provides an easy way to do it. The farmer who does not advertise will often let the city merchant disfigure his place with billboards or unattractive advertisements on the side of his barn. Some dealers are successful in getting their advertisement on the side of the farmer's truck. The farmer should not overlook his own opportunity along this line. By putting an attractive advertisement with the farm name, ad-

dress and telephone number on the outside of the truck, it will help greatly in making sales. The fact that there is a particular farm back of a certain product appeals to many buyers. Many farmers get orders for later deliveries as a result of truck advertising. The idea of advertising on the side of a truck is not new; nearly all city truck owners advertise by means of their trucks.

Hauling Cost a Factor in the Farmer's Price

Many farm products are left on the farm because it does not pay to market them. It has often been said that the hauling between the farm and the railroad is the costliest part of the transportation. In the past it has cost as much to haul many products from the farm to the shipping point as it has from there to the general market. With trucks and better roads, this cost to the farmer has been greatly reduced. When the farmer lowers his hauling costs, he saves on what he buys as well as on what he sells, for he pays the freight both ways.

It is desirable for every truck owner to keep a definite record of all his truck operating costs to determine exactly what his hauling costs are. Complete cost information will make it possible for the truck owner who hauls for his neighbor to make a fair charge without loss to himself. In city hauling, where accurate records are kept, it has been found that the cost of fuel, oil and tires is less than one-fourth the total expense, yet a lot of people take these items as a basis for their hauling charge. These items represent a smaller part of the total cost in farm hauling than in city hauling because the farm truck is used a fewer number of days, there is less mileage and therefore greater interest and depreciation costs per mile on the farm truck than on the city truck.

Cost Not the Only Factor

Whether the fruit grower adopts the truck as a means of solving his hauling problem or not should depend on whether he can get better results and whether there is a greater total saving with it than with wagons and teams. Complete records of how the products were handled, the cost of hauling, the time saved and the price received are necessary to measure the results. Cost is not the only factor. The possibility of getting the produce to market more quickly and in better condition might determine its use. The time saved when all hands are needed in the field might make a costly but quick method of hauling by truck the cheaper method in the long run.

The fruit and truck farmer's hauling is seasonal and time is often the most important factor in getting the products on the market. There is no question but that the truck is a great time saver. On good roads, and there is no reason why all of our roads should not be good in the near future, and on reasonably long hauls, a man and truck can do about as much hauling in a day as a man and team can in a week.

Pneumatic Tires Best

Automobiles and trucks not too heavily loaded and equipped with pneumatic tires do not damage oiled roads as much as wagon traffic. While the pneumatic tires tend to smooth out the surface of an oiled earth road so it will shed the water, the wheels

of a loaded wagon will cut it up and allow the rain to soak in. With either snow or mud on the road, pneumatic tires are better than solid ones. When the truck is equipped with pneumatics, the farmer can not only go on soft roads without getting stuck but can also drive on grassy fields.

Truck Troubles

The farmer's truck troubles are due almost entirely to one of, or a combination of the following, four things: Overloading, speeding, lack of frequent inspection and lack of proper lubrication. About two-thirds of all farm trucks are of one ton or less in capacity. A large per cent of the truck owners load their machines beyond the rated capacity. This is partly due to having a machine that is too small and to the natural inclination to load a machine beyond capacity, which is very bad practice. It weakens the machine as a whole, wears out the tires more quickly and results in greater cost of repairs and much higher depreciation.

High speed and overloading seem to go hand in hand. Some drivers like to put on all the truck will hold and throw the gas wide open. When the roads are perfect and the driver is careful, there is not so much damage and danger, but if the road is rough, speeding will tear a truck to pieces in short order.

For best service in truck operation, too much attention cannot be given to a careful inspection at regular intervals to see that all parts are tightened and adjustments made, and all parts needing it are properly lubricated in accordance with instructions furnished with the machine.

Study Lubricating Chart

Every truck operator should study the lubrication chart religiously and carry out the suggestions given on it. Use only the best oils and greases; oils are always cheaper than machinery. Proper lubrication of motor is most important of all. Neglect of this may result in damage to the motor that cannot be repaired. Do not overlook the fact that it is not only desirable, but necessary, to drain all old oil out of the crank case at regular intervals and put in fresh oil to get the best results.

Keep Tires Up

To get the greatest service out of the tires, keep the pressure up to that recommended by the manufacturer. To allow the air pressure to get low to make riding easy is bad practice. There is not only danger of rim cutting but also side cutting; the latter is more liable to cut where there are ruts on the road.

Rambles of a Horticulturist

(Continued from page 7.)

strip supports, and with a shook cover. There are two excellent new cold storage plants of large capacity on the place. Mr. Marshall finds these of great value, especially in the fall and early winter when it is often difficult to maintain a sufficiently low temperature with common storage.

The Littleton Section

A day was spent in the vicinity of Littleton, Mass., which is the leading fruit center of Massachusetts, and probably of New England also. This community produces about one-quarter million boxes of apples annually. A thriving co-operative is in existence, supported by many of the best growers in the district; it has recently employed on a full-time basis Frederick E. Cole, formerly of the Massachusetts Agricultural College, who will assist both in co-operative work and in helping to raise the standard of production. E. A. Hackett writes me that the paper wraps used this fall will all be stamped with the Pomological slogan, "Eat More Fruit, the Health Food."

Among the orchards visited at Littleton were those of P. W. Tingley, H. L. Frost, R. M. Lingham, F. B. Priest, N. H. Whitcomb and S. C. Bates. A most excellent dinner was served the

Pomological party at the home of H. W. Knight. The orchards showed about the same general conditions as have been described. McIntosh is the most favorite variety. Some Gravenstein, Opalescent, Delicious, Transparent, Spy, Ben Davis, Greenings and Baldwins are also being grown. The Transparent trees were the largest the writer has ever seen. They were healthy and apparently free from blight and were bearing good crops of large fruit. The Transparent, however, occupies an inconspicuous place in New England fruit growing.

Visits to Maine Orchards

The next state in order was Maine, where the orchard of Mr. Clark at Wells was visited somewhat in haste. The outstanding feature was the peach orchard. In spite of the northern location, Mr. Clark says he gets a crop about every other year. The buds withstand about 20 degrees below zero. Last winter the temperature reached 30 degrees below, and while all buds were killed, only one tree was destroyed. The trees were making a splendid growth. Last year Mr. Clark received \$8 per bushel, the sales being made mostly to tourist resorts in the vicinity.

In the orchard of E. W. Doloffs, Standish, Me., no dormant spray had been used for three years. The only summer sprays used were sulphur and arsenate of lead in dust form. While scab was present, it was not bad. This result was somewhat at variance with the results in other localities, where dust sprays on the whole have not given satisfactory results in controlling scab. There were some very nice Delicious apples in this orchard.

The McArthur orchard at Limington, owned now by the daughter, Mrs. Perkins, proved of especial interest. Here there were Baldwin trees 50 years old and small in size from past neglect, which had been given good care only for the last three or four years. It is one of a few New England orchards that was cultivated this season. The trees are in excellent thrift and are bearing one of the heaviest crops seen in New England. Some of the apples were small, and thinning of the inferior fruit would have helped the remaining fruit materially. Mrs. Perkins was thinking about discontinuing the use of nitrate, believing the trees were probably making sufficient growth, but the visitors advised her against this. The way these old trees had come back and were bearing a good crop of fruit after such a long period of neglect was another eloquent testimonial of the fruit growing possibilities of New England.

On the following day visits were made to the Thompson orchard at New Gloucester, that of W. J. Ricker at Turner, and the T. E. Chase orchard at Buckfield. At the latter place addresses were made by various parties. At Buckfield are the headquarters of the Maine Fruit Growers' Exchange, of which George G. Young is manager.

At this point the writer left the Pomological party and had a fine visit overnight with Dr. Karl Sax and wife at the Experiment Farm at Monmouth. The experimental work of Dr. Sax on apple root stocks and in apple breeding was particularly interesting to the writer. Marked differences are being found in the growth-producing qualities of different seedling stocks. The Baldwin, according to Dr. Sax, is not sufficiently hardy in northern Maine, and, furthermore, it is highly self-sterile and is not pollinated readily by other varieties. The McIntosh, Spy and Delicious, in Dr. Sax's opinion, provide promising material from which to develop new varieties better suited to Maine conditions than any existing varieties known. The new Cortland apple, recently developed by the New York Agricultural Experiment Station, and which is similar to and a little later than the McIntosh, is being watched with interest.

(Note.—The account of the remaining visits in New Hampshire, Vermont and Western Massachusetts will be presented in November.)

The Value of Orchard Maps

by Lloyd Austin

Division of Pomology, University of California

IS IT worth while for the average commercial orchardist to go to the trouble of making a map of his ranch, showing the location of every tree? Will such a map help in any way to increase the net profits which he receives from the orchard? The progressive, up-to-date grower of deciduous fruits will almost invariably answer "yes." The reasons for an affirmative answer are as follows:

The map may be used as the basis for a few simple records of certain individual trees which require special attention, or it may be the basis of an orchard analysis to locate all the low producing trees, and determine the various causes contributing thereto, and also the necessary remedial measures.

A few of the very evident and practical uses for an orchard map are the following:

1. One of the most important uses for an orchard map is to make note of certain trees which have been attacked by insects, diseases or rodents. When such records are made regularly, it is usually possible to apply control measures before the injury has progressed far enough to decrease the productivity of the trees.

2. A map is of value in locating trees which are not the variety that they are supposed to be. Nearly every orchard contains some trees of this sort. They may be of some other variety, or they may be seedlings. In an almond orchard, the seedlings may bear bitter nuts, and great care must be taken not to mix these with the good ones. The map should usually indicate that such trees should be top-worked.

3. In the case of orchards which are planted with two or more varieties in alternating rows, or pairs of rows, for cross-pollination purposes, the map is of great value in showing the location of the rows of the different varieties. It is also useful in locating occasional trees which were planted in the wrong row.

4. When one has determined the best locations for temporary irrigation ditches, they can be marked on the map. This will greatly facilitate laying out the ditch lines in years to come.

5. In case a careful orchard analysis is to be undertaken, the map will be the basis of individual tree production records over a series of years. This is usually an estimate of the crop on each tree, taking into consideration a normal full crop for the year, rather than actual weights of the fruit.

Court Upholds Decision on "Apple Cider Vinegar"

THE UNITED STATES Supreme Court has upheld, in a case brought by the Department of Agriculture under the federal food and drugs act against the manufacturers of vinegar made from evaporated apples, the contention of the department that vinegar manufactured from dried apples should not be labeled "apple cider vinegar."

The legal labeling of cider vinegar has been the subject of controversy for several years. The department has taken the position that the term "cider vinegar" should be applied only to the product made from fermented apple juice, while the manufacturers of vinegar from evaporated apples have contended that the vinegar made from dried apples is identical with the vinegar made from fresh apples and is therefore entitled to be labeled as cider vinegar.

Judgment for the government was rendered in the lower courts, but in an appeal brought by the manufacturers, the United States Court of Appeals reversed the finding of the lower court. The United States Supreme Court, where the case was finally carried, held that vinegar made from dried apples was not the same as that produced from apples

without dehydration; and that, therefore, evaporated-apple vinegar should not be labeled "apple cider vinegar," the term generally applied to vinegar made from fresh apples.

The Supreme Court in this decision recognized a principle that is of great importance in enforcing legislation aimed to prevent misbranding in any form. The court stated:

"The statute is plain and direct. Its comprehensive terms condemn every statement, design and device which may mislead or deceive. Deception may result from the use of statements not technically false or which may be literally true. The aim of the statute is to prevent that resulting from indirection and ambiguity as well as from statements which are false. It is not difficult to choose statements, designs and devices which will not deceive. Those which are ambiguous and liable to mislead should be read favorably to the accomplishment of the purpose of the act. The statute applies to food and the ingredients and substances contained therein. It was enacted to enable purchasers to buy food for what it really is."—*The Official Record*.

Cultivated Orchards

AS A RESULT of long-continued experiments and of observations in many fruit sections throughout the state, horticulturists at the New York State Agricultural Experiment Station, at Geneva, advocate the cultivation of most New York orchards during the summer, followed by a cover crop, preferably a legume, in the early fall. This practice is said to have some decided advantages over the system of orchard management that keeps the trees in a permanent sod, at least for most apple districts in the state.

In the station experiments, an average yield per acre of 69.16 barrels of apples was secured over a 10-year period from an orchard left in sod, as compared with 116.8 barrels per acre from a cultivated orchard during the same period. In growth and vigor of trees, the cultivated orchard showed a decided improvement over the one in sod, it is said.

Cultivation is believed to result in this benefit because of the saving in soil moisture, and the lack of competition between the trees and the sod for moisture and plant food. Also insect pests and diseases are noticeably better controlled in cultivated orchards than in sod orchards, due to the protection afforded the insects and disease organisms during the winter by the sod.

Where soils wash badly, or on rocky land where cultivation would be difficult, tillage may not be practicable, it is pointed out. Also, the cost of tillage is greater than maintaining a sod, so that unless the net returns are greater from tillage, there would be no advantage for the latter method. On most apple soils in New York, however, it is believed that tillage will prove more profitable than a sod.

Fertilizers in the Apple Orchard

COMMERCIAL fertilizer applied annually for the past 25 years in a Rome Beauty orchard on the grounds of the New York State Agricultural Experiment Station, at Geneva, have failed to pay for the time and labor of applying them, according to statements made in a report on the experiments recently published by the station.

"In western New York apple orchards that are well drained, properly cultivated and supplied with organic matter and humus by means of cover crops, commercial fertilizers are not needed," says Dr. U. P. Hedrick, station horticulturist who with Prof. H. B. Tukey, associate horticulturist, describe the experiments upon which this statement is based. "In sod orchards it has been shown re-



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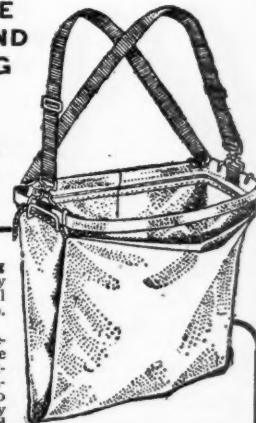
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peatedly that fertilizers containing nitrogen are decidedly beneficial. Orchards on sandy, gravelly soil of low fertility, or on shallow, droughty ground may respond to fertilizer treatment, and the station experiment would not be a safe guide under such conditions. For the better fruit soils of western New York, however, it is evident that careful cultivation and attention to pruning, spraying and other orchard operations will give more satisfaction and will be much more economical than the use of commercial fertilizers."

Fruit growers who are doubtful as to whether or not their orchards need fertilizers are advised to conduct their own fertilizer test, as only in this way can they be fully satisfied, it is said. A simple scheme for laying out and conducting such a test is given in Station Bulletin No. 516, which is now available for free distribution upon request.

If the 140,000 carloads of apples which were shipped during the past season were made up into a single train, the engine would be in New York City while the caboose was still in St. Louis. Western states shipped approximately 50,000,000 bushels of apples and eastern states about 40,000,000 bushels.—*Crops and Markets*.

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Oriental Moth Changes Cover Crop Practice

THE ORIENTAL peach moth, which has entered eastern peach sections and is causing considerable concern, will necessitate a change in cover crop practices if the insect is to be successfully combatted, according to A. Freeman Mason, extension fruit specialist in New Jersey. Only such cover crops should be used, it is said, as will make a quick growth in the late fall months. Rye and wheat offer the best possibilities.

Cultivation in peach orchards must be started not later than April 1 if the grubs of the oriental moth are to be killed, according to Dr. T. J. Headlee, state entomologist. Such a practice will not give clover or vetch sufficient time to make a growth in the spring, and since they make only a slight growth in the fall under ordinary conditions, it will not pay to use them. Rye and wheat, if planted in late August or early September, will make a fair growth, will remain green through the winter, and will prevent light soils from blowing.

Rye is better adapted to light or poor soils. If drilled, it will not be difficult to get it under in the spring with plows or disks. If broadcast, a little hand work may be required to clean up the plants which grow close to the tree trunks. Wheat makes an excellent cover on the richer soils and is not as hard to put under in the spring as rye. Five to six pecks per acre of either should be sown. Regardless of the height of the crop in the spring, it should be plowed under not later than April 1.

Prune Growers Delay Affiliation

IT IS reported that the Washington Growers' Packing Corp. has decided not to enter the North Pacific Co-operative Prune Exchange for the present. The directors of the organization prefer to have the growers decide this matter at their meeting in December.

The settlement of the question of affiliation is not an important matter for the present year because of the fact that a large proportion of the 1924 dried prune crop has been sold for some time. In addition, a considerable quantity was sold in the fresh condition. The prune marketing situation of the Northwest, as well as in California, is showing increasing strength as the marketing season advances.

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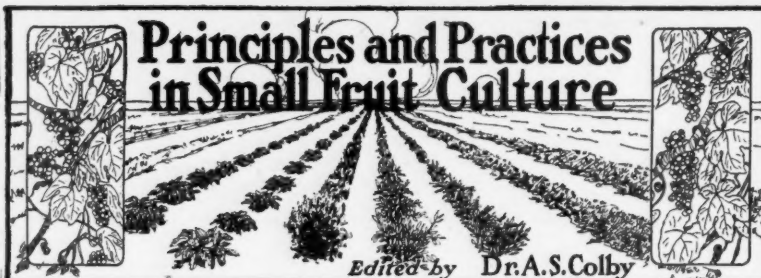
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Principles and Practices in Small Fruit Culture

Edited by Dr. A. S. Colby

October with the Small Fruits

OCTOBER is an especially good month for the small fruit grower to take account of stock. Other business men—and the successful grower of small fruits is of necessity a business man—take account of stock some time or other, the season chosen being the most logical for the individual business. With the small fruit grower, the logical time seems to be after the spring and summer rush is over, when he has the time to study the reasons for his profits and losses and consider how he can be more successful next year.

Dead men may tell no tales, but dead small fruit plants do. Raspberry patches killed by crown gall; strawberries by leaf roller or white grubs; currants by cane borers; blackberries by orange rust; grapes by root worms and black rot, all tell an eloquent tale of mismanagement and lack of knowledge on the part of the owner. Even in a well-cared-for plantation, individual plants here and there can usually be found suffering from one or more insect or fungous troubles common to small fruits.

Study Your Plants

In taking an account of stock, it is first necessary to know the difference between healthy and diseased plants. A case in point is as follows: In my travels over Illinois in connection with the eradication of raspberry diseases, I am often called upon to diagnose some trouble in a raspberry plantation. The owner is not certain whether the plant is really diseased or whether its decline in production is due to unfavorable soil or climatic conditions. Raspberries infected with one of the newly discovered systemic diseases, such as bramble streak, leaf curl and mosaic, are often unsuspected as carrying these troubles in the first stages. With the gradual spread of the infected areas throughout the patch, however, the characteristic dwarfing, curling and mottling of the foliage and general stunted appearance of the new canes, the presence of disease becomes so plainly discernible that even a casual glance is sufficient to show the condition. By that time the whole plantation is usually past saving. Early and thorough inspection is essential. Infected plants should be rogued out. In the case of bramble streak, plants contiguous to those affected should be destroyed.

Knowledge of Insects and Diseases Essential

It is becoming increasingly evident that profitable small fruit culture cannot be carried on without a more complete knowledge of the common insects and diseases affecting these plants. This knowledge can be secured on the part of the grower through membership in local, state and national horticultural societies, and by attendance at the meetings; by reading the books and magazines published which cover the field; and by a study of federal and state experimental station publications, usually free for the asking and of real value from the standpoint of the data secured as a result of experiments.

After the grower knows what to look for, he should go over his plantation carefully to study what is wrong. He should make observations, preferably in a note-book, especially kept for the purpose, to jog his memory in the future, as conditions are being improved.

Many troubles show up especially well in the early fall. For example, October will usually offer the latest opportunity to study the leaves of the small fruits, including grapes. Most of the insects and diseases which trouble these fruits can be identified by the way in which they attack the foliage of the host plant. The peculiar spotting of the blackberry leaf of a plant infected with anthracnose; of a strawberry or gooseberry with leaf spot; a grapevine with black rot; the long slits cut out of the raspberry leaf, work of the raspberry saw fly larvae; or the shrunken, spotted appearance of the grape leaves affected with the grape leaf hopper, all show to the grower taking stock, if he does not already know the severity of the infection, and gives him sufficient time to lay his plans for cleaning up the plantation that fall, winter and spring.

Cane and Crown Troubles

Other small fruit troubles, especially those found on the canes and crowns of the plants, should be looked for. These include crown gall of the brambles, cane borers of the bush fruits and brambles, root worm of the grape and white grub of the strawberry. As with other pests, the first step and really the most important in their control is to recognize their presence. The next step with the scientific grower is to follow the recommendations available in the literature to control them.

It is probable that in many small fruit plantations certain cultural practices exclusive of spraying, such as those having to do with cultivation, pruning and fertilizing, could be very properly improved. The best evidence of the value of up-to-date practices is available through an inspection of neighboring plantations where pruning is correctly done, good cultivation or mulching with straw manure is the rule, and where some fertilizer is applied.

How to Start Bush Fruits from Cuttings

October is often a good month to start a new lot of currant and gooseberry cuttings. Properly cared for this fall and winter, one may have vigorous, well-rooted cuttings ready to begin growth at once with the opening of the growing season next spring.

Currants and gooseberries start into growth very early in the season, usually earlier than the ground can be worked without injuring it for later cultivation. If the rooted cuttings are already in the ground, instead of being stored waiting for the soil to become ready for setting, they will make an early start and with one growing season make large, vigorous plants worth more for early fruiting than ordinary one-year-old stock.

In selecting cutting wood, only shoots of the present season's growth should be taken, removing several of the smooth, healthy, well matured, yearling growths from different parts of the bush. If the parent bush is vigorous, this thinning of young wood is beneficial in connection with the annual pruning, for otherwise the bush will soon become too crowded. Such crowding is a common cause of unfruitfulness, while such fruit as is borne will be of inferior size and quality.

Cuttings should be from six to 10 inches long, the longer the better

if they are to be planted in the fall. They should be set out in a nursery row as soon as possible after being cut.

The site for planting should be well-drained, with soil of moderate fertility, which can be easily worked. The cuttings should be planted in furrows wide enough apart for cultivation and deep enough to accommodate the cuttings, leaving not more than two buds exposed. If the cuttings are long, they may be laid in the furrow in a slanting manner.

Depending on the size of the variety as a mature plant, each cutting needs from four to 12 inches in the nursery row. The furrows should be carefully filled with soil of good texture, and a dust mulch should be provided to encourage the growth of roots at once. With the approach of freezing weather in November, the cuttings should be mulched to prevent their heaving during the winter months. A shallow ridge of soil may be thrown up over the cuttings with a plow or cultivator, or a mulch of straw manure three inches deep may be applied. In any event, the mulch should be removed early in spring.

Announcement

THE EDITOR of this Department is anxious that it shall serve the readers of the AMERICAN FRUIT GROWER MAGAZINE efficiently in solving their problems in small fruit culture. He welcomes, therefore, any questions any reader may have on the growing of strawberries, raspberries, blackberries, currants, gooseberries, grapes, etc. All questions will be promptly answered and those of general interest will be published in this column. Address questions to A. S. Colby, Department of Horticulture, University of Illinois, Urbana, Ill.

Construction of Cool Storages for Apples

(Continued from page 8.)

A large, well-insulated door, at least six feet wide, should be provided on the exposed side. Refrigerator doors are the most successful, or a door may be built using double thicknesses of tongue and groove material, separated by waterproof building paper, for both front and back, filling the space within with crushed cinders or oiled shavings. This door should have a total thickness of at least eight inches. It is also essential that the door frame should fit tightly to the masonry wall.

The storage rooms should be dark at all times. Light encourages the ripening of the fruit, hastening its maturity; hence its presence is contrary to the principles of good storage conditions.

Estimating the Size

In estimating the size of a storage cellar necessary to care for an average crop, a good rule to follow is to multiply the number of bushels to be stored by two and one-half. This will give the needed capacity in cubic feet, from which proportional dimensions can be determined. In all cases, at least eight feet of headroom above the false floor should be provided. The figure obtained above will allow ample room for space between packages and for aisles. This figure is based on crates or baskets. Less space will be required for fruit stored in bulk, but in building a storage cellar it should be made sufficiently large to care for the maximum amount of fruit without undue crowding.

Growers Developing Greater Efficiency

THE FARM population of the United States has increased only about 15 per cent since 1900, but the farm production has increased during the same time about 40 per cent. These figures show that the average food producer of the United States is gradually becoming more efficient, due to the employment of better methods and improved machinery.

Roots and Their Adaptabilities

by M. J. Heppner

Division of Pomology, University of California

IT IS a well-known fact that many orchards are "going back," due primarily to the wrong rootstock for the particular soil conditions. To be true, the question of affinity between stock and top also plays an important part, but this phase of rootstocks will not be discussed here. Instead, only the soil requirements of the various deciduous fruit tree rootstocks will be discussed, in order to show how each root is best adapted to particular conditions. The reader must bear in mind that the question of affinity, as mentioned above, should always be considered before making a final selection of the rootstock.

The peach root is best adapted to light, well-drained loamy soils, showing preference to those that are considered as warm soils. Although this root can withstand fluctuations in soil moisture, it should not be used on those soils that have any tendency towards standing water. This root seems to make good growth in the shallow soils, due to the fact that it is a shallow feeder.

The almond root is also adapted to the light soils but showing a preference for those that are loose, warm and well-drained. Wherever possible, this root should be used on those soils that are too dry for the peach. Although the peach is adapted to the dry soils, the almond seems to withstand soils that are even drier. Being a deep feeder, the roots occupy a greater area of soil and hence are capable of growing on the soils too dry for the peach.

The apricot root shows its preference for the soils that are a little heavier than those described above. Unlike the peach and almond, it cannot tolerate drought and has shown itself to be sensitive to standing water. Observations have disclosed that this root is very sensitive to alkali in the soil.

The Myrobalan plum root is best suited to the heavy, moist soils and hence is totally unlike the peach, almond and apricot in this respect. It also adapts itself to light soils underlain by a heavy, retentive subsoil.

The Mahaleb and Mazzard cherry roots are adapted to the light, mellow soils, especially those that have good depth. However, both are being grown successfully on heavier soils where the moisture conditions are satisfactory. The Mahaleb seems to be a much hardier root than the Mazzard, being capable of withstanding more drought in summer and showing less injury from standing water in winter. The Mazzard is very exacting in its water requirements, too much or too little often causing ill effects.

The Japanese and French pear roots vary greatly in their soil requirements. Both thrive in the heavy soils, provided water conditions are proper. Standing water, such as a high water table, means trouble for the Japanese root for it cannot tolerate such conditions. With the French root the opposite is true, namely, it is capable of withstanding "wet feet," a factor of prime importance.

How to Secure Maximum Mileage From Trucks

by F. A. Whitten

VIRTUALLY every truck owner would willingly pay good money for a device that would guarantee to reduce his gasoline and oil bills a substantial amount, in some cases as much as 50 per cent. A little matter of daily routine, taking but a minute or so a day, will accomplish the same results at no cost.

One-half of the secret of reducing gasoline and oil bills is to each day check the miles traveled by the truck, fill up the gasoline tank, recording the amount put in, and then figuring the miles per gallon obtained. The

second half is still easier—it consists of having someone interested in the operating cost of the truck to look at this daily record.

A truck in good condition will operate under normal loads and over average roads, at, say, 10 miles to the gallon of gas. This will be shown on the daily record. But a constant inspection of this record will disclose that gradually or perhaps suddenly only five or six miles are being obtained for each gallon of gas. The record proves a barometer that gives warning that something is wrong and that an inspection is required at once.

Sometimes dragging brakes may be responsible; again it may be that the carburetor requires readjustment, or tires may be worn so badly that they no longer are economically useful. Whatever the fault is, attention is called to it, the trouble located and rectified, and the gasoline consumption reduced materially.

If this daily check is not made and watched, the trouble goes unnoticed until sometime later when the unusually large operating costs are questioned or there is a general overhauling of the truck.

In practically all cases where too much gas is being used there is a corresponding wastage of oil. When the mixture is too rich the oil is being diluted and its lubricating value lost. Where brakes drag, more power than should be required is used with the extra consumption of oil.

Keeping gasoline mileage records, and watching them, will save a truck owner a substantial amount during the year, and also will be of value to him in getting a true picture of what his trucks are costing him to operate. It is particularly valuable to owners of fleets of trucks, as it shows what make trucks are the most economical over a period of service.

Adkins and His Boys

ONE OF the most interesting incidents which happened on the tour of the American Pomological Society was that which occurred at Newton, Ill., on the farm of B. T. Adkins.



B. T. Adkins and his three boys address the Pomological tour at Newton, Ill.

Mr. Adkins mounted a box in his packing shed to tell the visitors what they would see in going through the orchard. While he was giving his talk, his three little boys sifted out of the crowd, and before he finished speaking, they were gathered about his feet, manifesting no stage fright whatever from being out in front of the audience. The picture was so interesting that the Editor snapped it and it is presented herewith.

Mr. Adkins opened a barrel of nice Ben Davis apples for the crowd and had one of them in his hand when he was walking through the orchard. One of the boys was overheard to say:

"Dad, what are you going to do with that apple you have in your hand?"

"Give it to you boys," replied Mr. Adkins.

"Then why don't you give it to us now?" returned the lad.

Everywhere that Mr. Adkins went, the boys were with him, and it was only a little while until they were attracting more attention than Mr. Adkins' fine orchard and his nice herd of Jersey cattle.

One of the visitors asked Mr. Adkins what crop he considered the best one to grow. "These boys are my best crop," said Mr. Adkins. Everybody agreed with him.

Less Perishable Berries Needed

by W. A. French

WITHIN the last few years extensive plantings of red raspberries have been made in the Puyallup and White River valleys in the Puget Sound country. These berries are shipped to all parts of the United States, mostly in either the canned or barreled form. The radius of shipment of the fresh berries is strictly limited by the perishable nature of the fruit.

A fortune awaits the horticultural experimenter who can develop a firmer raspberry permitting 24 hours additional time before deterioration sets in. This would greatly lessen the trials and the losses of the berry growers. The same thing may, of course, be said of strawberries and loganberries.

At the Western Washington Experiment Station during the past 10 years, no less than 75 varieties of strawberries have been under observation, and of these but two are being recommended for planting in this region: the Marshall and the Ettersburg No. 121. There is a demand for a firmer and less perishable strawberry. Can such berries be developed without sacrificing the quality? Here is work cut out for the Burbanks of the future.

THE DOMINION of Canada requires that all imported fruit, except wild and citrus fruit, must be marked, in letters of prescribed size with the words "imported by," followed by the full name and address of the importer and, in the case of closed packages, with the name of the variety of the fruit and with a grade mark as provided under Sections 3 and 4 of the Fruit Act. In addition, any marks which are different from or inconsistent with the Canadian grade marks must be obliterated.

The removal of inconsistent marks and the branding as required above must be done as the packages are being unloaded from the "railway car or steamship or other conveyance in which they have been brought into Canada."

The marks required shall be placed upon the end of the packages.

Dealers handling imported fruit should see that the packages are marked as required under the regulations, as otherwise they will be held liable for handling fruit which is not graded and marked in accordance with the provisions of the Fruit Act.

THE AMERICAN Pomological Society will hold its annual meeting in co-operation with the New Jersey State Horticultural Society at Atlantic City, N. J., on November 11, 12, 13 and 14.

Particular emphasis is to be paid to marketing, distribution and increased consumption of fruits, according to a preliminary announcement issued by President Paul C. Stark. Among the subjects to be discussed are Co-operative Marketing, Development of Local Markets, Roadside Marketing, Utilization of Lower Grades as By-Products, Imitation and Synthetic Fruit Drinks, Pollination of Fruits, Taxation of Orchard Lands, Varieties of Fruits, and Treatment of Insects and Diseases.

Growers from all sections of the country are invited and urged to attend the meeting.

He takes his pipe 1800 miles into China

And for a very good reason

No, it isn't because his wife objects to his smoking in the house. We don't know that he has a wife, for that matter.

Mr. Mellor takes his pipe far into the interior of the Land of Confucius because he is attached to the good U. S. S. Palos, which, among other waters, sails the upper Yangtse Kiang.

This is what Mr. Mellor writes:

U. S. S. Palos
Chung King, China
January 24, 1924

Larus & Bro. Co., Richmond, Va.
G. S. Schloss,

Dear Sir:

I have just been reading a letter that was sent to our canteen, and thought that this would be a good time to tell you of our appreciation of the fine tobacco that your firm shipped us. I feel that I can say the same for the crew of this ship.

Yes, this sure is an out-of-the-way place and we sure enjoy a good smoke. We feel that we can at least rely on your tobacco always being fresh, especially that in the glass jars.

This ship is now eighteen hundred miles in the interior of China on the upper Yangtse Kiang. One of the greatest pleasures we have is riding poles out in the hills surrounding Chung King and there is hardly a man but what carries one of your small tins of tobacco with him on these trips. Every man on the ship smokes Edgeworth and quite a few chew it too.

Another thing that I might mention is that the empty jars make good containers for shaving gear and soap on board ship.

Speaking for all hands and the ship's cook I can say that we will uphold your fine tobacco on this part of the river as every man is for Edgeworth first, last and always. Best regards to Edgeworth from the crew of the U. S. S. Palos on the Yangtse River.

Sincerely yours,
(Signed) Robert N. Mellor.

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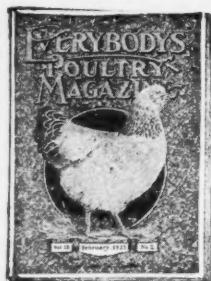
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To Retail Tobacco Merchants: If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Ready-Rubbed for the same price you would pay the jobber.

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(Continued from page 33)

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Increasing Winter Egg Production

by H. A. Bittenbender

THROUGHOUT the country, many thousands of little chicks were lost due to the changeable spring weather. Judging from these indications, fresh eggs this winter are going to bring a good price.

It is none too early to commence to plan for getting a profitable winter egg production. A few suggestions in regard to the methods of obtaining winter egg production might be helpful. It is not always a question of how much feed, what kind of feed, or a good chicken house that will determine the number of eggs that are to be obtained during the winter months. As a matter of fact, one cannot point out one single factor that is absolutely the governing one in controlling egg production. A brief statement of many of the factors which control to a large degree the number of winter eggs obtained from the flock will be given at this time.

It is necessary to have well matured pullets by the first of November, or not later than the first of December. It is necessary, in order to obtain well matured pullets, to hatch them early enough so that they obtain full growth before cold weather sets in. In order to get the growth necessary, the flock must be well fed during the summer and fall months so that when they are put in winter quarters they will have the necessary maturity for the laying condition.

Perhaps one of the greatest evils in winter poultry management is the over-crowding of the poultry house. At least, under farm conditions, three square feet of floor space should be provided for each fowl. In order to obtain the use of the entire floor of the house, a board may be placed under the roosts to prevent the droppings from contaminating the litter. If the dropping board is placed 30 inches high and not more than six feet in width, it will not be dark underneath the dropping board. It is necessary to have the house constructed so that sunlight reaches every corner. Ventilation must be thorough. In order to secure the right amount of ventilation, the front, which should be the south side, must be left partly open. Part of the front should be covered with muslin canvas, placed on frames or rollers, so that during the daytime it can be raised and during severe and stormy weather, lowered. If at any time frost collects on the inside of the house, it is a warning that proper ventilation is not being obtained. Fowls can stand a great deal of cold, provided it is dry, but they cannot stand dampness, which is always found in poorly ventilated houses.

Feeds and the Methods of Feeding

The feed necessary for an economical winter egg production is not particularly hard to obtain, but it is desirable that a variety be provided. We might describe the feeds and the methods of feeding in the following manner: that whole grains, a ground mash, animal food, green food, oyster shell, grit and water are all necessary for the hens in the winter time. In the summer, or when the chickens are given liberty of the farm, it is not hard for them to obtain practically all of these ingredients, but in the winter time they must be supplied in some available form. Shelled corn, two parts, and whole oats, one part, make a satisfactory scratch grain, to be fed in a deep litter of straw, chopped corn fodder or similar material.

A suitable ground mash can be made by grinding 200 pounds of oats with 100 pounds of corn, adding 100 pounds gluten and 100 pounds 60 per cent protein tankage.

This mash is kept before the birds in an open self-feeding hopper all of the time, so that they have access to it to balance up with the grain which is fed to meet the requirements of their body.

Green food can be supplied in the form of silage, roots, soaked or sprout-

ed oats and steamed clover or alfalfa. Grit can be supplied by scattering a layer of sand over the floor of the chicken house. Oyster shell should be kept before the birds in some kind of an open container, also an ample supply of drinking water in an unfrozen form.

A suggestion, perhaps, might be worth while as to the amount to feed. A statement based upon the figures obtained at the Iowa Experiment Station shows that Rhode Island Reds and that class of chickens should consume approximately one pound per bird per week of the grain feed, shelled corn and whole oats. During the four winter months of November, December, January and February, they consumed two-thirds of a pound per bird per week of the mash.

Leghorns and lighter breeds will consume considerably less, approximately seven-eighths pound of grain per bird per week and one-half pound per bird per week of the mash.

Colds, catarrh, roup and the like can best be kept out of the flock by controlling drafts, providing sunlight and thorough ventilation. As soon as any bird shows evidence of being out of condition, it should be removed from the flock. An occasional use of an intestinal antiseptic should be given, such as bichloride of mercury, in the proportion of one-seventh and three-tenths grain tablet to each gallon of drinking water. (Do not use drinking vessels that are metal.) This oftentimes will prevent the spread or the out-break of serious trouble.

Plans for a Community Evaporator

A SATISFACTORY community dryer or evaporator of limited capacity may be easily built from directions recently issued by the United States Department of Agriculture. The directions are as follows:

The thermos or fireless cooker principle is used in this dryer; that is, a space of three or four inches is allowed between the walls of the house, to be filled with sawdust. This holds the heat and relieves the necessity of a constant watch over the fire. The furnace should be placed at the opposite end from the door and a stovepipe run from furnace end to the door end and back with sufficient elevation to cause good draft. A dryer of this size and type should, with good management, dry from four to six bushels a day, and should pay for itself in one season. Wet weather has no effect on this type of dryer.

The house is six by 12 feet. The uprights in front are six feet eight inches. The uprights in back are six feet two inches to give roof six inches fall for watershed. Doors are fastened to two by four-inch uprights in front. Doors are two feet eight inches. The furnace is 15 by 15 inches by four feet, covered with two sheets (24-gauge) black sheet iron two inches apart—air space to prevent fire. The radiation is secured by ordinary stovepipe attached to furnace.

The house is heated after the plan of a tobacco barn—a small furnace of rock or brick is built at one end, a stovepipe carries the radiation to the opposite end of the house and back, with an elevation of two feet above the furnace. This stovepipe may extend outside of the house a sufficient space to escape the eaves and an elbow and three or four joints may act as a chimney, or if a chimney is preferred, it may be built at a cost of \$4 or \$5 additional.

There are three lattice partitions in the house, making four sections 32 inches wide for drying trays; 12 inches above the sill place across a piece two by four inches on which the center uprights, two by four inches, and the back upright, two by four inches rest. (Put upright pieces the

two-inch way.) The tray bearers, one by three-inch strips, are fastened to the uprights. The space between the tray bearers is filled with two-inch strips to act as guides for the trays and to force the draft to circulate between the trays. If these spaces are left open they will act as a flue and carry off the heat. The sides of the trays are of three-fourths by three-inch lumber, making the trays three inches deep. The bottom of the tray is made of lattice strips three-eighths by one and one-fourth inches, with one-inch space between the strips running lengthwise. The trays have a center partition to support the bottom laths and cheesecloth is used to cover the laths. There are eight inches from the top of one tray to the top of the next. The trays move on the bearers like a bureau drawer.

A small opening must be left at top of house just above doors—an outlet for steam.

A three-inch opening at front foundation must be planned to let in cool air to keep the fruit from sweating.

Successful Tree Planting

(Continued from page 15.)

tom of the holes or around the roots. Such material cuts off the supply of moisture and usually the tree suffers as a result. It is not desirable to put fertilizer in the hole with the tree but rather to apply it to the surface soil.

Pruning the Top

Since the root surface has been reduced in transplanting the tree, it is necessary to cut back the top to maintain a balance between top and root. If this is not done, when the tree comes into leaf, the foliage will give off moisture faster than the reduced roots can supply it and so the tree is dried out and killed. This is a point of advantage for the one-year-old whip in that a less amount of pruning is necessary to restore the balance. One-year-old apple whips should be headed at about 30 inches. With this type of tree, it is easy to train them the next year according to the modified leader system of training which is the type recommended for apples. With older apple trees, all the side branches are removed, with the exception of three or four, which are properly spaced on the trunk, and these are headed back to lengths of 12 to 16 inches and the leader left a few inches longer. With peach trees, all the side branches are removed with the exception of three or four, the leader cut out so as to form an open head, and the remaining side branches stubbed back to two or three buds. Trees should be pruned immediately after planting.

Treatment After Planting

If the planter will carefully follow the suggestions given in this article, he will secure satisfactory results in tree planting. However, the work of planting an orchard is not complete until a careful record and map of the planting is made. Some growers do this before a tree is set and make their planting according to the map. The records should be complete and should contain numberings of rows and trees and the names of the varieties. After making the map, all labels should be removed from the trees to prevent the small wires from cutting into the trees and possibly injuring or destroying them.

Rebuked

"What dirty hands you have, Johnnie!" said his teacher. "What would you say if I came to school that way?" "I wouldn't say nothin'," replied Johnnie. "I'd be too polite."—*Delineator.*

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(Continued on opposite page.)

Beekeeping for the Beginner

The Brood Chamber and the Brood Nest

by H. F. Wilson

FOR ONE to be successful in the manipulation of bees, it is necessary to have an intimate knowledge of the development of bees and the procedure followed by them in building the brood nest.

The brood chamber proper consists of the outside protecting framework used as a housing for the bees. In commercial beekeeping, this consists of the ordinary hive body with a bottom board and cover. Normally the brood nest itself is oval or round in shape, following the outlines of the bees when clustered, but as a matter of fact, the brood nest expands during the summer months to fill the entire hive body or other receptacle in which the bees may live. In the beginning of spring, we find the bees in an oval cluster, as mentioned in a previous article. During the spring, the brood rearing space and cluster is expanded as temperature permits.

If you will examine a single comb in a new hive before the bees have been able to completely fill it with brood, you will find the eggs and brood in a compact oval mass. The queen, in laying her eggs, does not go about filling up one complete side of the frame and then moving on to another frame, but lays eggs in a certain

cells near at hand, but the least disturbance will cause her to move about on the comb and take up the egg-laying process at some other point.

Depth of Cells

The cells for rearing brood are always practically the same depth, while those used for storing honey may be built out twice as deep as the others. If they are worker cells, they measure practically one-fifth of an inch across, or about 27 to the square inch. If they are drone cells, they measure approximately one-fourth of an inch or about 16 to the square inch.

Building the Combs

In the ordinary standard Hoffman frame, there are about 5000 cells, providing space for 5000 bees which weigh one pound. The wax which is used in building the combs comes from a series of eight glands on the last four segments of the under side of the body of the bee. Newly hatched bees do not have these glands fully developed and not until the bees are about 17 days old do they reach the maximum wax producing period. From then on the ability to produce wax declines somewhat, but even bees that live through the winter

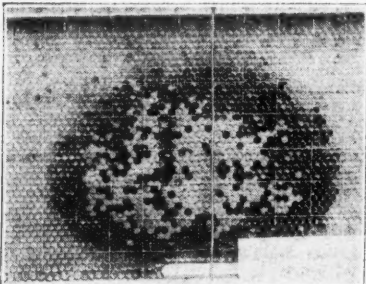


Figure 1—Method in which the brood nest is developed and the position of the first eggs laid in the spring. The first eggs are now developed into full grown larvae and are sealed over. Larvae in later stages of development are in the cells around the edge

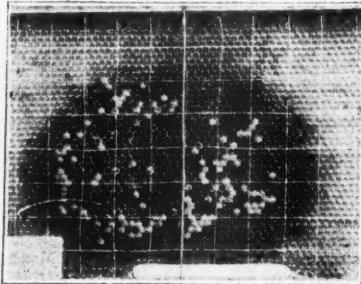


Figure 2—Same frame as shown in figure 1, five days later. Most of the young bees have out the cappings away and emerged. No young brood can be seen because this frame was kept away from the queen after the first period of egg laying had occurred

space in a comb within the area of the bee cluster. She then makes her way to the other side of the same comb and lays a number of eggs, covering practically the same area as on the opposite side.

How the Queen Does Her Work

In case three or four combs contain eggs in this way, there will be fewer cells occupied on the outside than in the center, thus providing the circular or oval shape of the brood nest. If one should shake the bees from the combs of a hive in the spring a few weeks after the queen has started laying, he would find in the center of the brood nest a number of capped cells. Surrounding these, toward the outside, will be a number of nearly full-grown bee larvae. Outside of this area, larvae of still smaller size, and finally eggs will be found, and still farther out will be found many cells of pollen, although after the brood rearing is well under way, the bees have a tendency to put pollen into empty cells wherever they can find them within the brood nest. Following the pollen, and at the extreme outside of the brood nest, one finds the stores of honey.

Theoretically, the queen is supposed to lay her eggs in circles, and this is supposed to be done in a systematic way, so that there is no loss of energy or time on the part of the queen. As a matter of fact, however, a study of the queen in an observation hive will show that she goes about laying eggs in a more or less hit or miss fashion and that the eggs are laid in the most convenient empty cells. It is true that if undisturbed, she will continue to lay in a series of

months are still able to secrete limited amounts.

Many beekeepers believe that the cappings of the cells are made of pure wax, others believe that they are made of pollen. However, they are neither made of pure wax nor pollen. Only a small amount of wax is used in sealing the cells, for if the covering were pure wax, the developing bees would suffer from lack of air, and so the cappings are made porous.

Some Drone Cells Are Necessary

Many beekeepers are also of the opinion that if the brood nest is composed entirely of worker comb, no drones will be reared, which is of course a very desirable condition. But this is not entirely true, for if no drone cells are available when the time for rearing drones comes around, the bees will tear down some of the worker cells and build drone cells in their place. It is wise, therefore, to allow a few drone cells, perhaps several hundred in each hive. It is best, however, to try and keep these along the lower edge of the frame.

During the brood rearing period, it is necessary that the bees have an abundant supply of pollen, and if the bees are unable to gather pollen in the field and the supply within the hive is used up, the bees will discontinue brood rearing until a new supply becomes available. It is quite essential, therefore, that the brood chamber be provided with ample stores of pollen, as well as honey, in the spring.

Subscribe to the AMERICAN FRUIT GROWER MAGAZINE—3 years for \$1.00.

New York Co-operative Reorganizes

STEPS involving important changes in policy and personnel, which have been under consideration for some time, were taken at the recent directors' meeting of the Western New York Fruit Growers' Co-operative Packing Ass'n, Inc. The large overhead of the association, together with the reduction in the apple crop for this season, is said to be chiefly responsible for the action being taken at this time.

The association has been maintaining a rather extensive field service, including its own inspection service at shipping points. This field service, while giving excellent results, has been adding materially to the overhead of the organization. The field service will be much simplified and greater responsibility will be placed on the locals. The association will hereafter replace its own inspection service with a federal inspection service and will work in co-operation with the Department of Farms and Markets, at Albany, in securing this service. B. D. Van Buren and H. S. Duncan, of the Department, attended the recent meeting at Rochester.

Nelson R. Peet, general manager of the association since its organization, has resigned. He will be succeeded temporarily by W. J. Hall, president. Ralph W. Rees, manager of the field service department, has also resigned. The field work will be in charge of George Miller, of Albion, N. Y. G. I. Blades, employee of the Federated Fruit & Vegetable Growers stationed at Rochester in charge of the sales of the association, will be succeeded by L. E. Waters of the Chicago office.

California Citrus Growers Get Faster Service

THE CALIFORNIA Fruit Growers' Exchange has recently been successful in effecting a new arrangement with the principal carriers by which a new special train service became effective July 20. The new freight schedule will reduce the old running time between California, and the consuming markets by 35 hours.

The railroads which will provide this service are the Santa Fe, the Union Pacific, and the Southern Pacific. The railroads found it possible to provide this service because of the large volume and value of the citrus industry to the carriers is an all-year-round traffic proposition with steady volume and no peak movement.

From the growers' standpoint, the new schedule makes it possible for each refrigerated car to make more round trips than would otherwise be possible. In effect, this will increase the refrigerator car supply. Furthermore, the reduced running time permits getting the fruit to market in better condition, and will make more efficient distribution possible.

Citrus Fruits From Australia

IT IS expected that from 40,000 to 50,000 cases of oranges will be exported from Australia to Great Britain during the present season. From 8000 to 10,000 cases will be used at the British Empire Exposition, after which the fruit will be sold to persons wishing to buy directly from the growers' organization.

The Australian government has agreed to share again with the grower the risk of transporting citrus fruit to the British markets. A government guarantee up to £10,000 will be allowed on fruit exported through the recognized Growers' Co-operative Ass'n in order to offset losses resulting from deterioration through no fault of the shipper.

An American citizen was knocked down by an automobile in Montreal. An officer rushed up and accosted him. "Parlez-vous francais?" "No, Chevrolet coupe."—Life.

Peach Borer Control in Southern Sections

(Continued from page 4.)

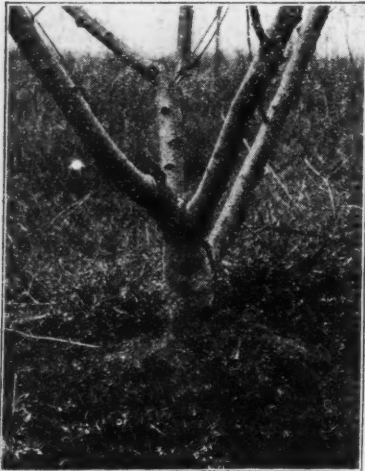
tainous section of Northeast Georgia should make the applications between September 25 and October 1. In the northern part of the East Gulf states apply between October 1 and 5. In Central Georgia and similar latitudes use between October 10 and 15, and in the southern part of the East Gulf states between October 15 and 20. The desired results cannot be expected unless the material is applied on or very close to the dates recommended, and growers are cautioned to give this point careful attention.

Age of Trees

Paradichlorobenzene can be used with safety on peach trees four years of age and older. It should not be used on one, two and three-year-old peach trees in the South, because under certain weather conditions injury results from the use of the chemical on trees of those ages.

Size of Dose

For four and five-year-old trees use three-fourths of an ounce of the chemical per tree. For all peach trees six years of age and older, of average size, use the full one ounce dose. One and one-fourth ounce doses should be



After placing the crystals around the tree, they should be covered with several shovelfuls of soil and packed with the back of a shovel.

used on very old trees if the trunks are unusually large.

Preparing the Soil

No preparation of the soil is necessary except to break the soil crust with a hoe to make it smooth, and to remove any grass or weeds. After the crust is broken, make the soil surface smooth with the back of a shovel. Do not mound the trees before applying the paradichlorobenzene. The gas from the chemical is much heavier than air and any borers working in the tree above the point where the crystal ring is placed will not be affected by the gas. Consequently it is very necessary to place the crystals at least at the level of the topmost borer gallery. Should there be indications of borers working in the tree trunk just above the soil level, sufficient soil should be placed around the tree to bring the level up above the gumming exudation before applying the chemical.

How to Apply

The material should be applied in a continuous band about one and one-half inches wide about the tree. Avoid placing the crystals against the tree or too far from it. A ring of crystals placed from one to one and one-half inches from the tree trunk has been found to be most satisfactory. Several shovelfuls of soil, free from stones, sticks and trash, are then placed on the crystal ring and packed with the back of the shovel. This packing after the soil is placed on the chemical is important in order to prevent surface loss of the gas and to prepare a mound which serves as a

container for the gas. This mound also prevents surface washing of the crystals. Avoid pushing the crystals against the tree trunk with the first shovelful of soil when covering the ring.

Later Attention to Mounds

In using paradichlorobenzene around four and five-year-old peach trees, growers are advised to tear down the mounds 28 days after applying the chemical to trees of those ages in order to remove all unspent crystals and to allow the confined gas to escape. As an added precaution against injury to the older trees, it is also advisable to tear down the mounds six weeks after making the application to trees six years of age and older. If the soil is removed from below the original soil level in tearing down the mounds, it should be replaced before cold weather sets in.

Grade of Paradichlorobenzene

Orchardists are strongly advised to use only *unadulterated paradichlorobenzene*, and when ordering specify a grade of the fineness of granulated sugar. Successful results cannot be assured with a compound containing only part paradichlorobenzene, and according to our present knowledge of this new means of borer control, they cannot be assured with chemicals other than paradichlorobenzene.

Four Diseases of Apples in Storage

by Charles Olive

STORAGE diseases take a heavy annual toll on the harvested crop of apples, and much of the loss can be blamed to the transportation companies and to the storage managements. Delaying the fruit in warm packing sheds or in railroad cars shortens the natural life of the apples and increases the tendency to rot and to scald. The loss can be prevented largely by proper methods of handling.

The following four diseases, Jonathan spot, anthracnose, blue mold and frost bite, I have found quite general on the Pacific coast and in the Middle Atlantic states.

Jonathan Spot

Jonathan spot is common particularly on Jonathan apples, but also occurs on the Esopus, Wealthy, Rome Beauty, Stayman Winesap and other varieties. The disease cannot be controlled by spraying. It is characterized by small black or brown spots, which give the fruit a freckled appearance. Occasionally, Jonathan spot may show on apples before they are picked, but its main development is after the fruit has been removed from the tree. The highly colored apples are more likely to be affected than the greener ones, but in storage a big proportion of the greener fruit sometimes develops the disease. The large apples are more susceptible than the smaller ones.

The disease can be greatly decreased by low temperatures. I have seen fruit badly affected in two weeks when held in common storage; the same fruit, placed in cold storage immediately after picking, has been disease-free after one month, and practically free even after two months. When the fruit is removed from cold storage, it should be kept as cool as possible, for the disease develops rapidly in a warmer temperature.

Anthracnose

Anthracnose is a parasitic orchard and storage disease mostly confined to the Pacific Northwest, but it also appears in other parts of the country. The rot spots are brown in color, with centers of a lighter shade. The disease is most serious when there are early fall rains or when the picking is delayed because of unfavorable weather. The rot continues to develop in storage, and though the fruit looks perfect at picking, it may become badly diseased both in common and cold storage. Apples affected with anthracnose, I have found, can be kept comparatively free from rot

18 or 19 weeks in a temperature of 32 degrees. However, apples that have had extreme exposure to the disease are unsafe for late holding in storage.

Blue Mold

Blue mold is a fungous disease confined almost entirely to storage fruit. It is of very general occurrence, and is by far the most destructive rot known, causing from 80 to 85 per cent of the loss of all stored apples. It is often called soft-rot, is of light brown color and has a musty odor and taste. When the rot is well advanced, powdery blue-green tufts develop on the surface, and these give off countless spores, each one able to produce a new rot. Stem punctures, scratches, or any other injury of the fruit, may furnish a starting point for the fungus, which afterwards may spread from one apple to another in storage, even to such fruit as is free from scratches or injuries.

Blue mold is mainly a disease of ripe apples, and overripe fruit is particularly susceptible. Low temperatures greatly delay the development of the rot on ordinarily ripe fruit but do not retard the disease much on overripe fruit. Indeed, if the disease is allowed to get started on any kind of apples while they are warm, the mold will develop rapidly even in cold storage. Losses from blue mold can be greatly decreased by careful picking and handling. It is necessary to guard against scratches and other injuries to the fruit, and to cool it to 32 degrees Fahrenheit within two weeks after picking. Spreading of the rot in packages or containers can be decreased by wrapping the apples, thus confining the spores and eliminating direct contact.

Frost Bite

Frost bite is also called a disease. The fruit may receive it in transit or in cold storage, and the defect has a close resemblance to internal breakdown. It may appear on any part of the fruit, and on the green apple as well as on the overripe. Apples will stand a temperature several degrees below 32 degrees Fahrenheit without freezing, the limit being about 28 degrees. Slightly frozen apples can be thawed out at 32 degrees without showing frost injury, but if they are badly frozen, or have had repeated freezes, they will show frost injury no matter by what method they are thawed out.

Pomological Tour Ends Successfully

THE TOUR of the American Pomological Society, which was completed at Amherst, Mass., on August 23, was the most ambitious venture of its kind ever undertaken, and was a success from every standpoint. Starting in Kentucky on July 14, the Pomological party traveled through 17 states, including Kentucky, Indiana, Illinois, Michigan, Ohio, Maryland, West Virginia, Virginia, Pennsylvania, eastern New York, Connecticut, Rhode Island, Massachusetts, Maine, New Hampshire and Vermont. The tour covered about 7000 miles instead of 5000 as originally estimated.

In each state covered, the state horticultural society arranged its summer meeting at such a time that the meeting could be held jointly with that of the American Pomological Society. The Hudson sedan of President Paul Stark made the entire trip. In many states automobiles accompanied the tour to adjoining states. The leading car also changed its personnel more or less from state to state.

In the different states visits were made to orchards in the leading fruit sections, where problems and methods were studied with the owners, experiment station men and other leaders. Much valuable practical information was obtained by everyone in this way. Every day one or more meetings was held, usually under orchard or home surroundings, in which important subjects were discussed by college men, officers of the societies, members of the Pomological party and

others. The best information on orchard practice was thus brought before the growers.

President Stark and other members of the Pomological party told the growers at every meeting of the work and aims of the American Pomological Society, and especially of the Eat More Fruit campaign which the society is actively promoting at the present time. Placards were placed on thousands of automobiles and large quantities of publicity material were distributed. Growers everywhere were interested in this movement and hundreds of new members were obtained by the society.

One feature was brought out very forcibly to those who accompanied the tour in different states. Everywhere the growers are of one general mind. While their local problems vary somewhat, they are all talking and thinking about such problems as spraying, cultivation, pruning, fertilizing, marketing their products, etc. With growers thus thinking alike, why should there not be more co-operation between the growers in different states and sections? The time has come when we need large co-operation in order to solve some of the big problems of the fruit industry. With growers of the same mind in different sections, there is no reason why there should not be more co-operation, and it is believed the desired co-operation would be secured if the growers in different sections understood each other better. The American Pomological Society has done a great deal toward bringing about a closer feeling between the growers of different states and sections and it is to be hoped that the good work will be continued.

Georgia Peach Crop Proved Record-Breaker

THE GEORGIA peach crop, as expected, proved to be a record-breaker. The shipments to August 16 reached 13,378 cars, compared with 8700 to a corresponding date in 1923. The total shipments for 1924 were expected on August 16 to reach 13,500 cars, compared with 8701 cars in 1923; 7368 in 1922, and 10,636 in 1921. The movement of Georgia peaches in July was unprecedented. The common carriers hauled 10,229 cars in July, against July totals of 5898 cars in 1923; 3681 cars in 1922, and 5564 cars in 1921.

The June shipments were the lightest in four years, the light output being due to cool weather during May and June, thus delaying the marketing season.

After the shipment of early varieties, there was a break in the movement from June 24 to 30, and markets were given an opportunity to recover before Carman's began to arrive.

Fairly good prices were received early in the season, but toward the latter part many disappointments were experienced by growers. Experts declare that the unsatisfactory returns of many growers were due in part to the tremendous production, but they also assert that the large number of varieties, the inferior quality of many shipments, and the lack of proper grading and packing of some growers played an important part.

Crop Report

THE GOVERNMENT crop report for September, which was issued on September 9, shows some further decreases in the estimated fruit production for 1924. The September estimate, as well as the estimate for August, 1924, the yields in 1923, and the five-year average yield for the years 1918 to 1922 are shown for the different fruits in the following table:

	FRUIT PRODUCTION FOR THE U. S.			
	(All Figures in Millions)		Forecast	Harvested
	Sept. 1924	Aug. 1924	1924	1918-22
Apples, total, bu.	179	184	197	167
" com'l. bbls.	28.1	29.4	34.3	27.7
Peaches, total, bu.	51.7	52.2	45.7	44.1
Pears, bu.	17.3	17.6	17.4	15.4
Grapes, tons	1.78	1.86	2.01
Cranberries, bbls.	.541610	.469